

OL. 86

NO. 2

C677
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Plant Profile
Carlisle Finishing Co.
(Page 58)

textile

FEBRUARY • 1960

bulletin

Johnston Mfg. Co. Modernizes	39
Preventative Maintenance Control	42
Complete Table Of Contents	94

WHEN USED ON LOOMS

NON-FLUID OIL

TRADE MARK  REGISTERED

STAYS IN BEARINGS

ORDINARY OIL DRIPS OUT, STAINS CLOTH, SOAKS FLOORS

NON-FLUID OIL lubricates dependably; bearings run cool and practically friction-free. Worthwhile savings on lubricant and application cost are effected. *Production of perfect cloth increased.*

Try NON-FLUID OIL in your Weave Room and judge for yourself. Send for free testing sample and Bulletin T-20.

For these reasons — 7 out of 10 of the largest mills throughout the country use NON-FLUID OIL for loom lubrication.

NEW YORK & NEW JERSEY LUBRICANT CO.

292 Madison Avenue, New York 17, N. Y.

Sou. Dist. Mgr.: Fred W. Phillips, Greenville, S. C.

WAREHOUSES:

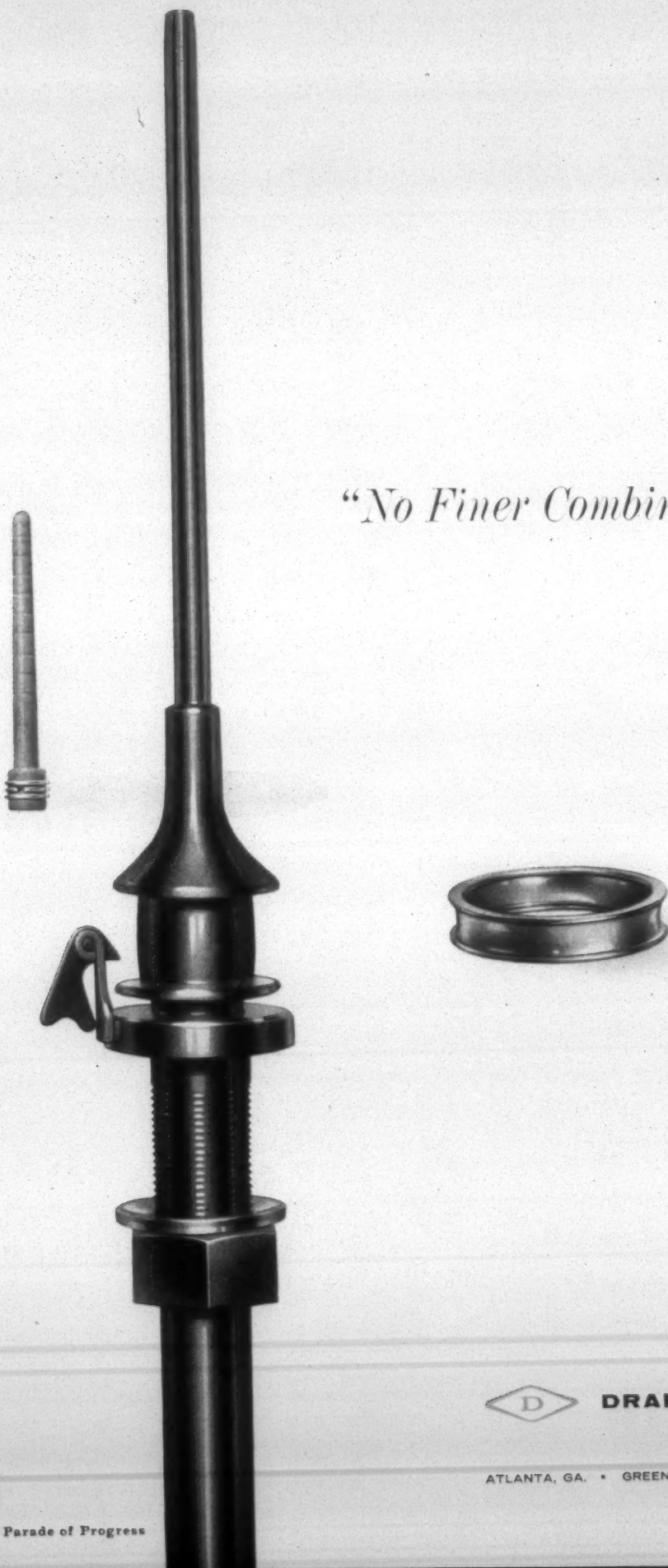
Atlanta, Ga. • Birmingham, Ala. • Charlotte, N. C. • Columbus, Ga. • Greensboro, N. C.
Greenville, S. C. • Providence, R. I. • Springfield, Mass. • Chicago, Ill. • Detroit, Mich.
St. Louis, Mo.

NON-FLUID OIL is not the name of a general class of lubricants, but is a specific product of our manufacture. So-called generic imitations of NON-FLUID OIL often prove dangerous and costly to use.

THE BULLETIN is published monthly by Clark Publishing Co., 28 West Morehead St., Raleigh, N.C. Subscription 1 dollar per year in advance, \$2 per year. Entered as second class mail matter March 1, 1911, at Postoffice, Raleigh, N. C., under Act of Congress, March 2, 1897.



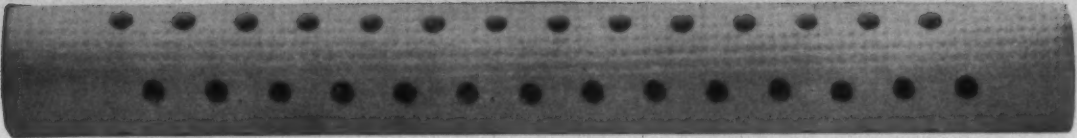
"No Finer Combination"



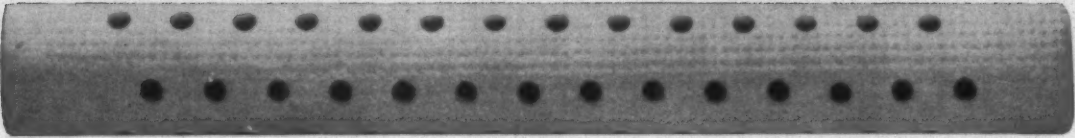
DRAPER CORPORATION

HOPEDALE, MASS.

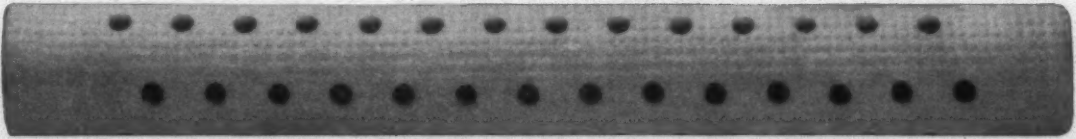
ATLANTA, GA. • GREENSBORO, N. C. • SPARTANBURG, S. C.



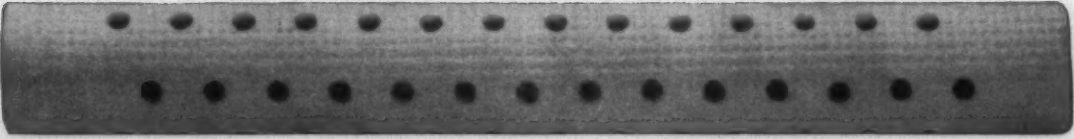
NEW... LIGHT-COLORED



SONOCO DYTEX "L" TUBE



AT REGULAR TUBE COST



Now . . . from SONOCO . . . new $\frac{5}{8}$ " I.D., premium-grade, light-colored Dytex "L" Tubes that are superior to any on the market! And, the price is *no more* than standard dye tube cost!

It's another success for SONOCO research, completely substantiated through critical evaluation by leading mills. With Plastavon Sleeves, the new "L" tubes provide the perfect one-time combination for all standard forms of package dyeing and bleaching. In

addition to natural and black, solid green may be ordered in $\frac{5}{8}$ " and $1\frac{1}{8}$ " I.D.

SONOCO offers a complete line of Dytex Tubes in standard diameters and in lengths from 6" to $61\frac{1}{16}$ ". Surfaces can be smooth or embossed. Solid colors of brown, green, tan and blue are available, and various colored end rings can be applied. Order a supply now.

Let SONOCO experience help you!



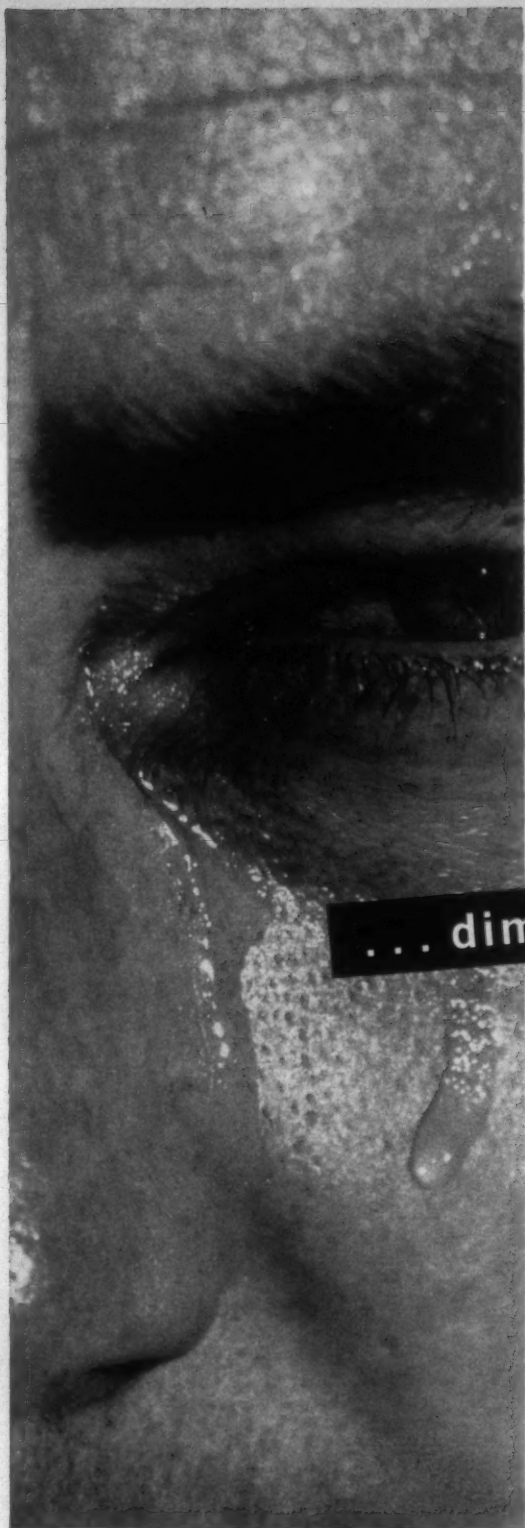
SONOCO

Products for Textiles

SONOCO PRODUCTS COMPANY

1183

Main Office—Hartsville, S. C. • Mystic, Conn. • Akron, Ind. • Lowell, Mass. • Phillipsburg, N. J. • Longview, Texas • Philadelphia, Pa. • La Puente, Cal. • Fremont, Cal. • Atlanta, Ga. • Granby, Quebec • Brantford, Ontario • Mexico, D. F.



CROWN'S NEW C-TRON

**LOW FREE
FORMALDEHYDE
RESIN**

... diminishes odor problems

often eliminates afterwash

While imparting high quality crease and shrink resistance, Crown's C-TRON resin solves formaldehyde odor-problems . . . both in the processing plant and in the finished fabric. Its extremely low free formaldehyde content has enabled many plants to eliminate the afterwash process entirely!

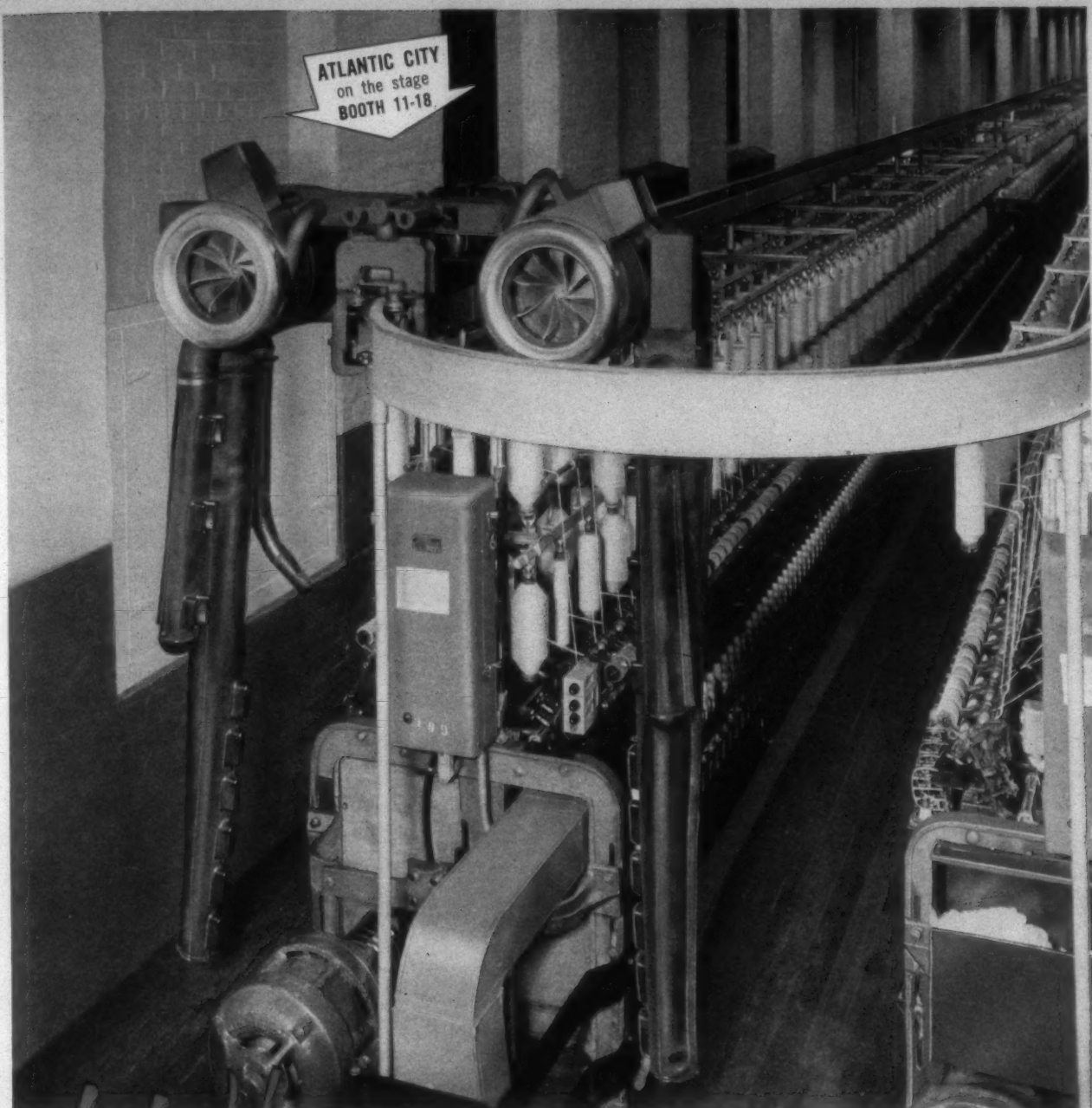
Crown's representatives will gladly give you complete details concerning the new C-TRON thermosetting resin including how it may solve any resin problems you may have involving deleterious effects upon light fastness of reactant type dyestuffs. Call your man from Crown — or write direct!

**Crown
Chemical**

CORPORATION

240 INDIA STREET, PROVIDENCE, RHODE ISLAND

Peterboro, N. H., Greensboro, N. C., Burlington, N. C., (Warehouse), Greenville, S. C., Ware Shoals, S. C.
IN CANADA: Marwin Dyestuff of Canada Ltd. IN SWITZERLAND: Bubeck & Dolder, Basle, Switzerland.



Where

**SPECIALIZED FRAME CLEANING BY
BAHNSON CROSS-JET
PAYS MORE PROFIT**

- In cleaning more frames, more often
- In cleaning more overhead area
- In cleaning more track area plus conductor bars
- In reducing track and wheel wear

PARTIAL LIST OF USERS

Burlington Industries, Inc.	Harmony Grove Mills, Inc.
Carolina Mills, Inc.	Joanna Cotton Mills Co.
Cone Mills Corp.	Sadie Cotton Mills, Inc.
Dominion Textiles Co., Ltd.	Spartan Mills
Erwin Mills, Inc.	J. P. Stevens & Co., Inc.
Glenwood Mills, Div. of	Wiscasset Mills Co.
Mayfair Mills	

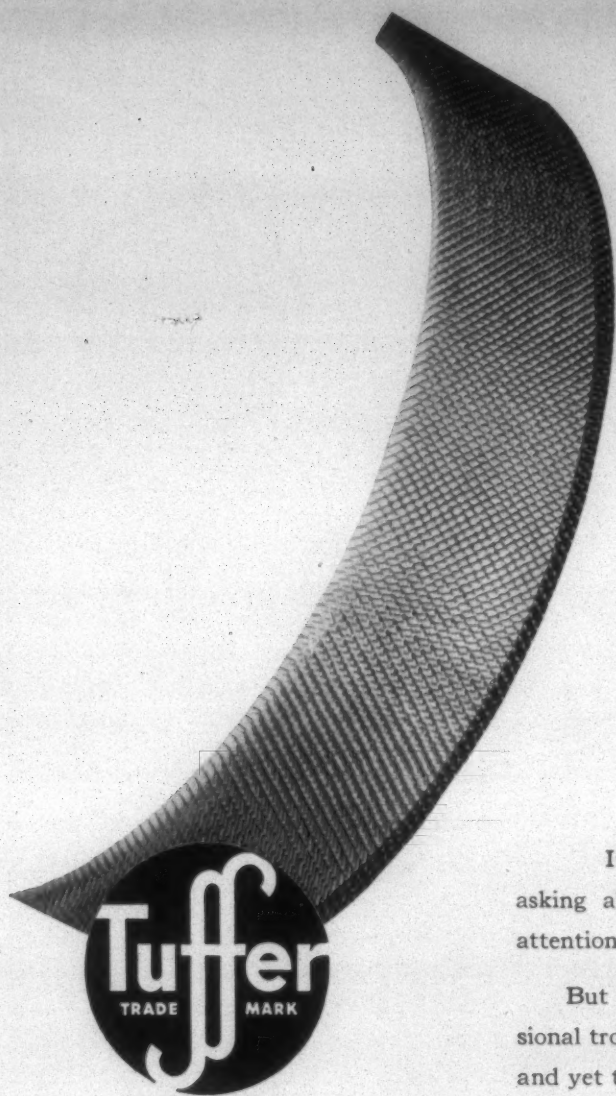
OTHER BAHNSON CLEANERS:

- AERO-SWEEP—FOR CEILINGS, WALLS
- ROV-AIRE—FOR ROVING • DUO-BLAST—FOR LOOMS

Bahnsen

AIR-O-MATION

THE
BAHNSON
COMPANY
WINSTON-SALEM,
N. C.



What is YOUR Carding Problem?

It's not so much the **BIG** problems in the card room we're asking about. They're quickly recognized and get immediate attention.

But it's the pesky little ones . . . those that cause only occasional trouble. You're more apt to put them off "for a little while," and yet they are eating up useful production time.

It could be a little slippage on the roll,
or improper alignment of the teeth, due to jams,
or points not properly ground,
or the need for a *special* clothing for synthetic fibres.

Little troubles can become **BIG** problems in time.

Check them *now*, with the help of a Tuffer Sales Engineer. He has the experience of over 90 years behind him—in both card clothing research and production.

TUFFER PRODUCTS

- Card Clothing for Woolen, Worsted, Cotton, Asbestos and Man-made Fibers
- Napper Clothing and Brushes
- Top Flats re-covered and extra sets loaned at all Plants
- Lickerins rewired at Southern Plants
- Hand Stripping Cards

*Call or Write to Our Home Office
for Immediate Attention—No Obligation*

HOWARD BROS.

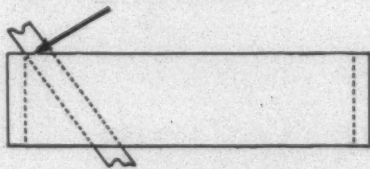
WORCESTER 8, MASSACHUSETTS

Southern Plants: Atlanta, Ga., Gastonia, N. C., Greenville, S. C.

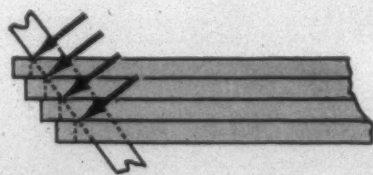
Direct Representation in Canada

Gates 4-in-One Check Strap LASTS up to 3 TIMES LONGER

New Checking Principle is Secret of Longer Wear—



With the ordinary one-piece check strap, all shock and wear from the picker stick are concentrated at one point.



Gates 4-in-1 Check Strap is built with four separate bands. As the checking action begins, a portion of the picker stick force is absorbed by the top band—then in turn, the second, third and fourth bands each absorb a portion of the shock, providing a checking action that is smooth and even. Wear is distributed evenly over the entire width of the strap, increasing service life up to 3 times.



The Gates Rubber Company, Denver, Colorado

The Mark of Specialized Research

TPA-900

You Get These Important Benefits:

Unaffected by Changes in Humidity—no stretch or contraction—ready to go Monday mornings without time-consuming adjustments.

Stronger and Tougher than Leather—yet flexible and light in weight.

Absorbs Shock of Picker Stick—resilient and flexible—conforms to any action of the picker stick, absorbing blows and shocks.

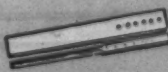
Saves Installation Time—quickly installed and adjusted without removing picker sticks. No new brackets needed.

Competitive Price—even though Gates 4-in-1 Check Strap has many important advantages over ordinary straps, it is competitively priced. For faster, more economical production, equip your looms with *all Gates specially engineered accessories*...available from Gates Textile Distributors.

Take-up Roll Coverings
Card Bands
Cone and Evener Belts
Spinning Frame Drives



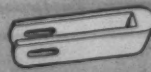
Reversible
Pickers



Tex-Hide
Harness Straps

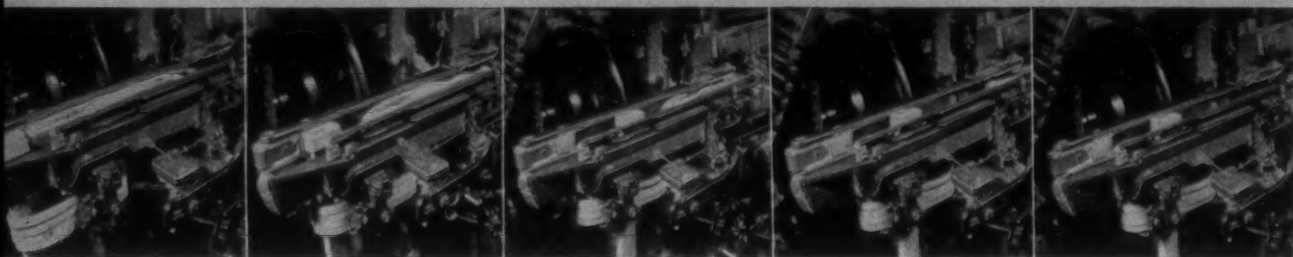


Tex-Hide and
Vulco Loop Pickers

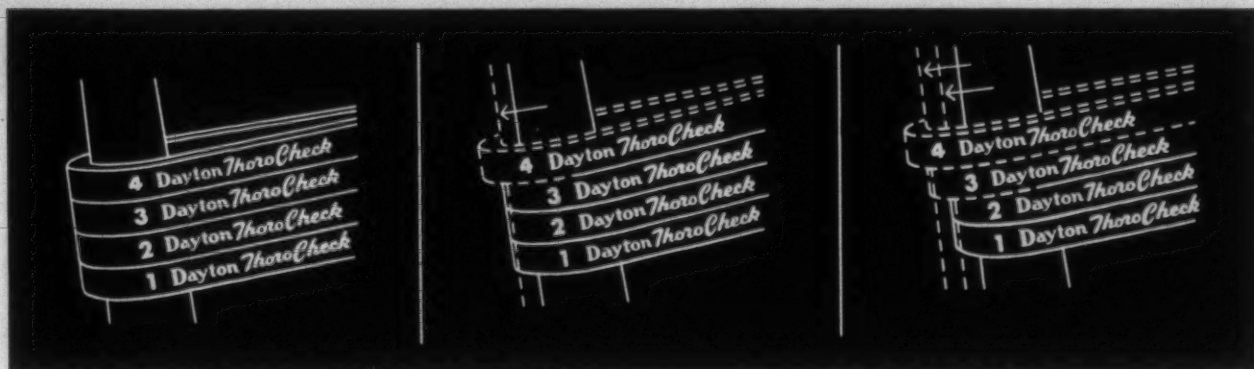


Thin Tex, Vulco, Tex-Hide &
Super Tex-Hide Lug Straps

Gates Textile Accessories



MILLIONS OF EXPLOSIVE BLOWS yet the Dayton Thorobred Loop Picker stays good as new on both regular and high speed looms. The angle of the picker face is faultless, without the slightest strain on the shuttle. Dayton's precision-smooth molding of fabric and rubber prevents lint pick-up and hanging filling. It's easy to parallel Dayton's Loop Picker accurately on the stick without tearing the lug ply, thanks to the special flared bottom at the tapered hole.



DAYTON ENDLESS THOROCHECK STRAPS OUTWEAR all others 3 to 1—save up to 50% in strap costs at leading mills. Why? Because there's less break-down. Dayton ThoroCheck Straps are for safe, *graduated* checking and keep picker in contact for perfect boxing. ThoroChecks help you step up production and cut downtime.

NO BUGGY WHIP ACTION of ordinary open-end check straps with Dayton ThoroChecks, as the stroboscopic camera shows. That's one of the reasons for the longer production life and the high speed performance of Dayton ThoroChecks.

GUARD 3 WAYS AGAINST LOOM DOWNTIME

Dayton's Thorobred 3 protects heaviest shock and wear points

When you add up the cost of downtime, labor, maintenance and inefficient production, you find that the day-in, day-out dependability of Dayton's Thorobred Loop Picker, Check Straps and Lug Straps on your loom make important dollar-sense. With less shock and wear and less downtime. Thorobred-protected weaving is a real money-making combination.

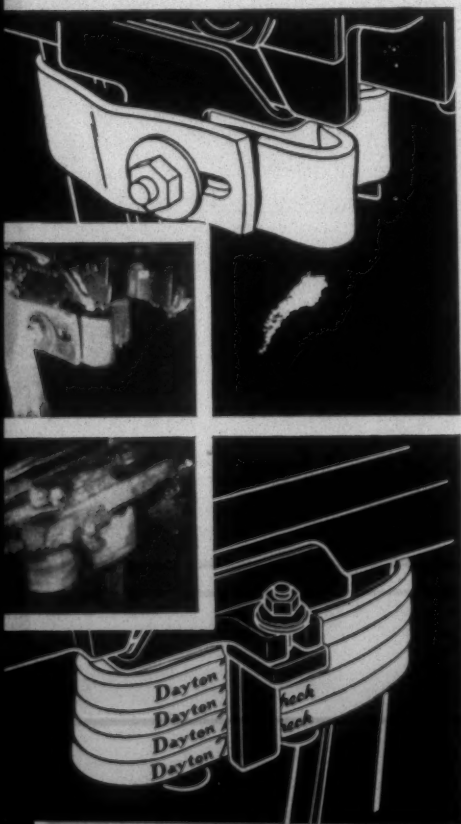
Ask your Dayco Representative to set up a test. Phone or write the Dayton Rubber Co., Textile Division, 401 South Carolina National Bank Bldg., Greenville, South Carolina.

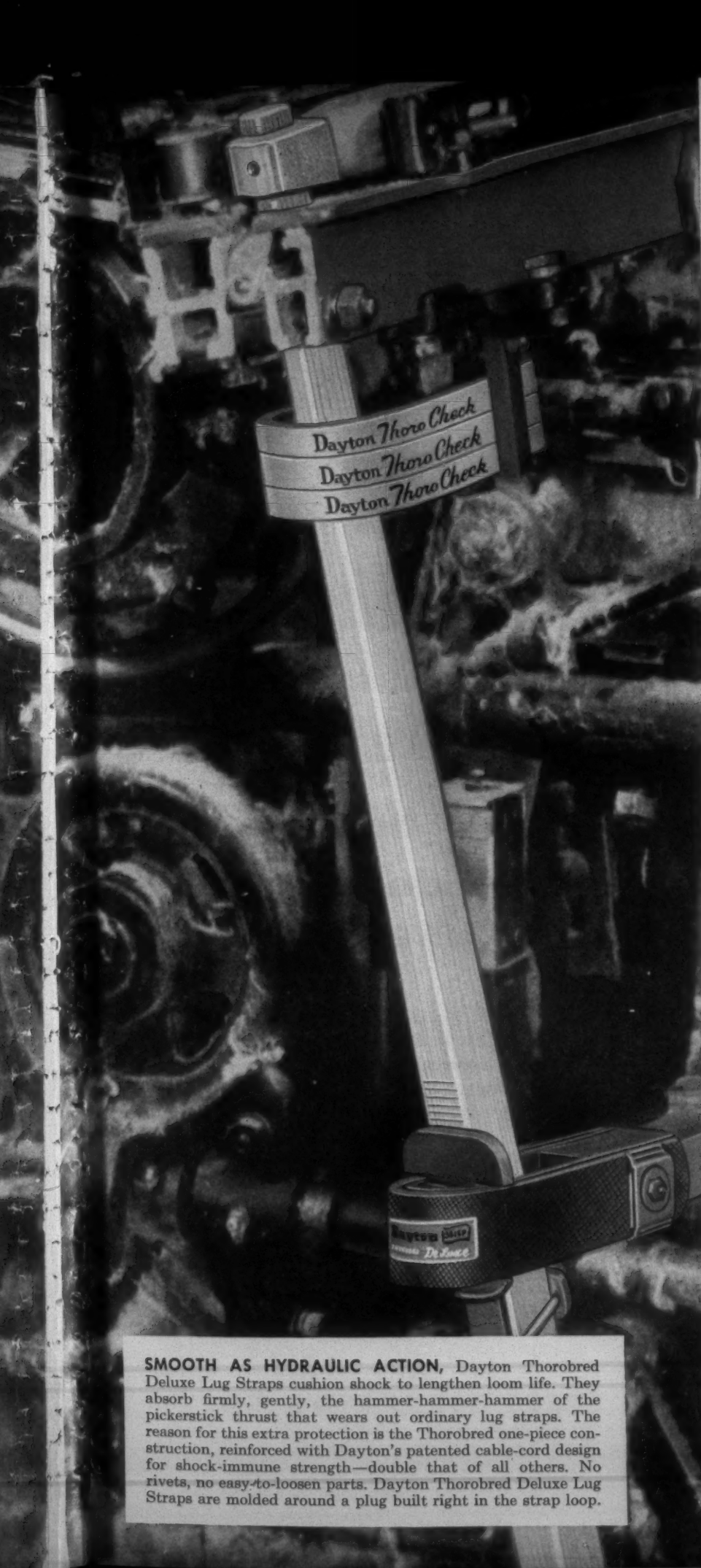
Dayton Rubber



Dayco and Thorobred Textile Products
for Better Spinning and Weaving

OVERSEAS PLANT: THE DAYTON RUBBER CO., LTD., DUNDEE, SCOTLAND





Major Mill makes Record-Breaking Economy Run

Running a high-speed test over 14 months at 182 picks a minute, a major mill added up 70,200,000 impacts without sign of wear or need of adjustment of Dayton ThoroCheck Straps. Lower maintenance, reduced downtime ran up a 25% savings, and increased production of this mill and many others.

The special factor in the Dayton ThoroCheck is the smoother, "graduated" checking action, eliminating drag over the stick, allowing efficient functioning at highest speed.

Your loom's out of business when the old-fashioned single solid strap breaks. But never with Dayton ThoroChecks.

Here's triple and quadruple insurance to keep your looms in production. When one's worn, the other Dayton ThoroChecks keep your loom going. Only when the loom is down for some other purpose, need a new ThoroCheck be installed. ThoroChecks also save on downtime after the week-end shutdown. Unaffected by temperature and humidity changes, ThoroChecks are ready to go at start-up time without tedious readjustment.

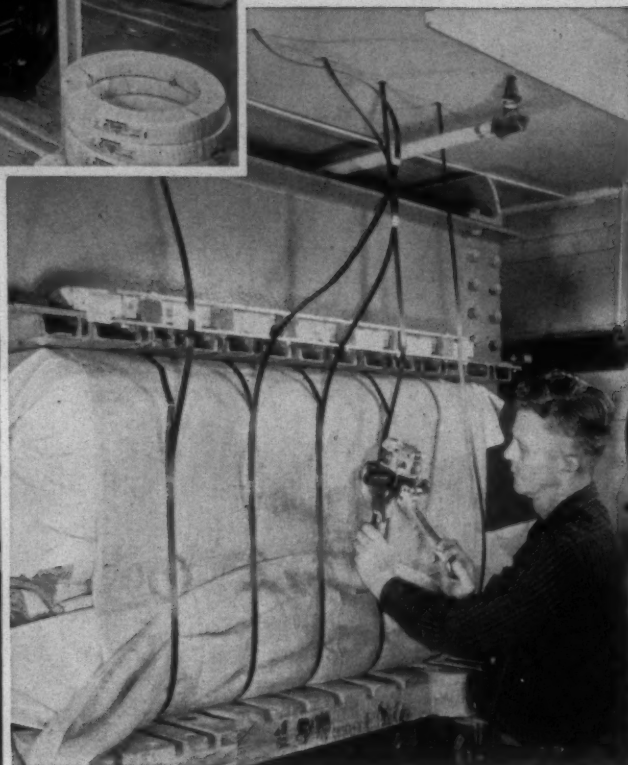
These mills not only tested the ThoroChecks but installed Dayton's Thorobred Lug Straps—a soundly designed unit to cut down wear throughout the loom. The built-in cushion accounts for the shock-proof feature absorbing fast starts and stops. And Dayton's patented cable and reinforcement doubles its shock-strength over all the others.

Economy records are also possible with Dayton's remarkable specially designed loop picker. It takes all the pounding and punishment of the new and heavier shuttles and higher speeds, yet outlasts other pickers 2 to 1 (and these new-type shuttles are $2\frac{1}{2}$ times heavier than the conventional dogwood). Dayton designers point out that the slight-tilt construction provides perfect shuttle contact and the rounded front edges stop hanging filling, the narrow back eliminates wear on the lay-in strap. This triple economy combination of Dayton Rubber is thus far unmatched in its field.

SMOOTH AS HYDRAULIC ACTION, Dayton Thorobred Deluxe Lug Straps cushion shock to lengthen loom life. They absorb firmly, gently, the hammer-hammer-hammer of the pickerstick thrust that wears out ordinary lug straps. The reason for this extra protection is the Thorobred one-piece construction, reinforced with Dayton's patented cable-cord design for shock-immune strength—double that of all others. No rivets, no easy-to-loosen parts. Dayton Thorobred Deluxe Lug Straps are molded around a plug built right in the strap loop.



Strapping is fed from dispensers in room above press (inset). A magnetized bar holds the straps in position while bale is readied.



Signode's exclusive Model SFC tool tensions the strapping, feeds seals from magazine, and crimps them. Straps are severed at the seal. No waste strap.

Signode way produces denser bales and reduces strap use by 17%



These before and after photographs show clearly the improved density and appearance of bales.

Here's an example of a simple and inexpensive answer to a packaging problem. Waste—which was part of the former cut-to-length strapping method—was eliminated, with a 17% saving in the amount of strapping used. Bales are better looking. Their increased density saves about 7% of valuable space in storage and shipment. The entire strapping operation is simplified, goes easier and faster.

Why not let a Signode man take a new look at your packaging and shipping operation. He has an eye for savings, specialized knowledge of textile applications, and a complete line of strapping tools and machines at his disposal. Call him today, or write:



First in steel strapping

SIGNODE STEEL STRAPPING CO.

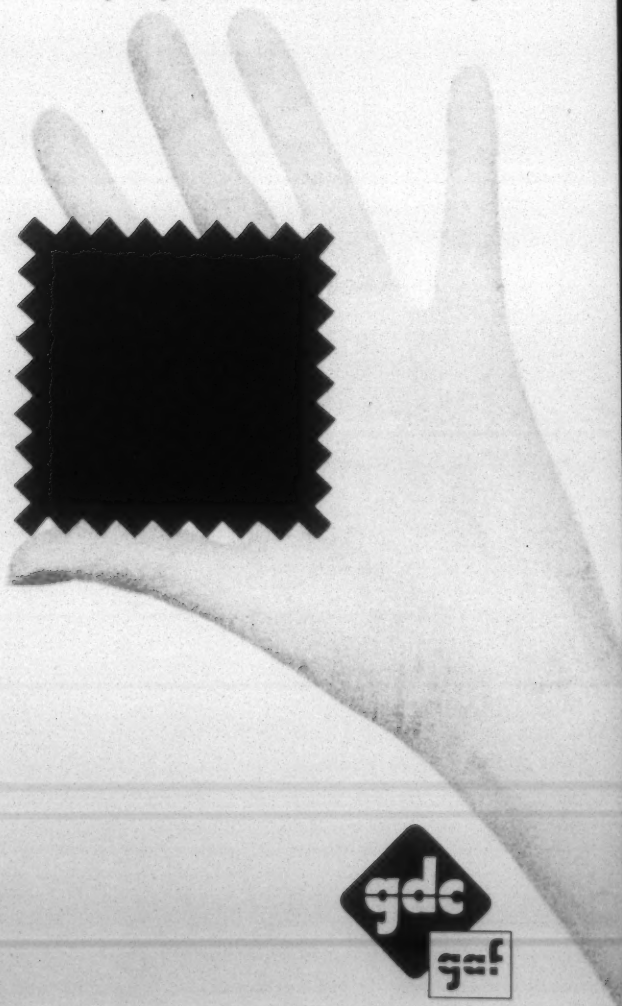
2665 N. Western Avenue, Chicago 47, Illinois

Offices Coast to Coast. Foreign Subsidiaries and Distributors World-Wide
In Canada: Canadian Steel Strapping Co., Ltd., Montreal • Toronto

NEW! FROM GDC INDANTHRENE MAROON BROWN B INFRA PASTE

**distinctively different—a unique advance
in vat dye chemistry for self and fashion shades**

Developed in the laboratories of GDC, Indanthrene Maroon Brown B Infra Paste represents the most important advance in vat dye chemistry in recent years. Although not an anthraquinone or indigo type, this new GDC dyestuff offers all the desirable qualities of a vat dye with greater economy and a distinctive maroon brown shade unequalled by any other manufactured dyestuff.



more than a laboratory development—
an important advance in vat dyeing!

INDANTHRENE[®] MAROON BROWN B INFRA PASTE

...An original development in vat dye chemistry...A timely fast brown shade that is otherwise unobtainable with a "straight" dye...All the well-known fine qualities of vat dyes, with unsurpassed leveling properties and economy—for the prestige dyeing and printing of cottons and rayons.

INDANTHRENE MAROON BROWN B INFRA PASTE is a development of more than theoretical interest. It is a significant and very useful addition to the dyehouse inventory for running colorfast, fashion-wise shades. The attractive maroon brown tone dyes with the excellent fastness characteristic of vat colors and with top efficiency in dyehouse production.

INDANTHRENE MAROON BROWN B INFRA PASTE in medium depths of shade exhibits a lightfastness rating of 6. Fastness to AATCC Wash Test #4 is rated at 4-5. Fastness to 0.3% chlorine solution is 3-4.

INDANTHRENE MAROON BROWN B INFRA PASTE provides yet another plus factor in its dependable working properties. Speck-free results are inherent from the high standard of Indanthrene Infra Pastes. The color is extremely level dyeing and well suited for regular vat dyeing procedures on conventional equipment. A special printing type is also available. The dye is a "natural" for indoor and apparel shades on cellulosic materials and blends, offering full satisfaction to mill management and consumer alike.

FROM RESEARCH TO REALITY



GENERAL DYESTUFF COMPANY

A SALES DIVISION OF

GENERAL ANILINE & FILM CORPORATION

435 HUDSON STREET • NEW YORK 14, NEW YORK

CHARLOTTE • CHATTANOOGA • CHICAGO • LOS ANGELES • NEW YORK

PHILADELPHIA • PORTLAND, OREGON • PROVIDENCE • SAN FRANCISCO

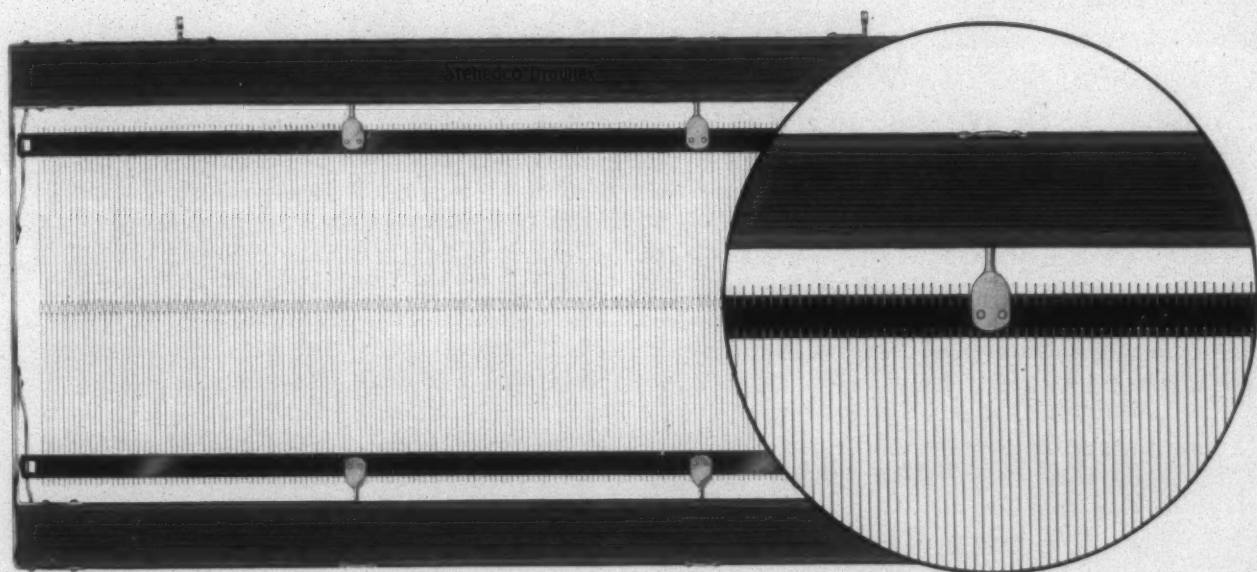
IN CANADA: CHEMICAL DEVELOPMENTS OF CANADA, LTD., MONTREAL

MEMBER VAT DYE INSTITUTE—INDANTHRENE DYES MANUFACTURED BY GENERAL ANILINE & FILM ARE SOLD OUTSIDE THE UNITED STATES AND CANADA UNDER THE TRADE NAME "FENANTHREN" BY DISTRIBUTORS ALL OVER THE WORLD.

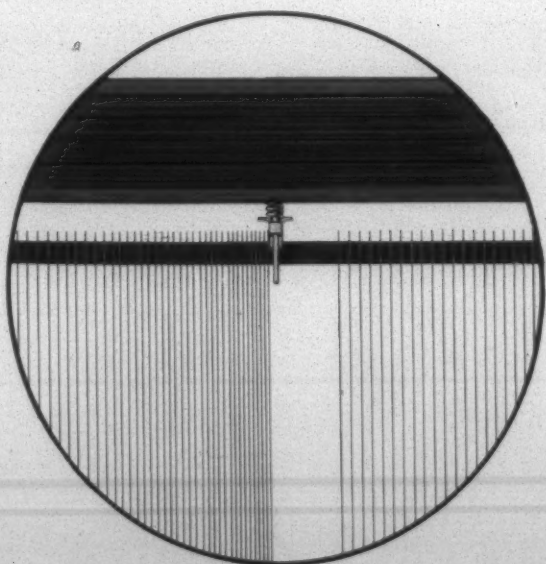
Stehedco

DRAWTEX HARNESS

IMPROVES EFFICIENCY AND QUALITY WITH PERFECT HEDDLE SPACING

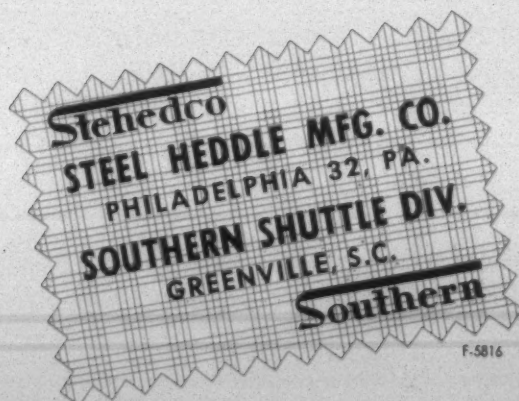


Are your weavers and fixers handicapped by bunching of heddles at rod supports, as illustrated below?



Stehedco Drawtex rod supports allow completely free movement of the heddles. There is no obstruction to keep the heddles from finding their natural position on the rod. Therefore, warp streaks from heddle bunching are completely eliminated and down time to correct this condition is a thing of the past.

This is only one of many Stehedco Drawtex advantages. Ask our sales engineers to tell you all about them.



Other Plants and Offices: Granby, Quebec, Canada • Lawrence, Mass. • Greensboro, N. C.
Atlanta, Ga. • Textile Supply Co., Dallas, Texas • Albert R. Breen, Chicago, Ill.

Expansion or modernization... immediate or long range... you can stay within your budget with

West Point's Step-by-step plan for better slashing

Improving slashing doesn't necessarily mean you have to throw out all old equipment and start over... you can start with a single unit and follow a planned program of replacements. All the components of the famous West Point Pacesetter Slasher can be purchased individually to replace units at points where obsolescence and wear are affecting production. This enables you to attain top slasher-room quality and production with a minimum of capital investment in any one year.

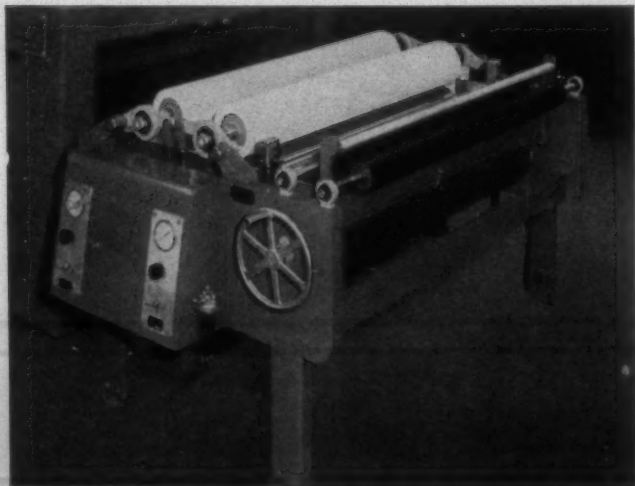
Call a West Point Foundry slasher specialist

to help you adapt the "Step-by-Step" Plan to your program. He will show you how the individual West Point slasher components may be added to your present equipment "Step-by-Step" at the points most needed to achieve immediate improvement in efficiency, quality, or production. Thus, "Step-by-Step," you can arrive at a stage where you will profit from the full benefits of superior West Point slashing. And you can do it on a predetermined schedule—to suit your own individual budget requirements.

Feature for feature... West Point sets the pace in quality.

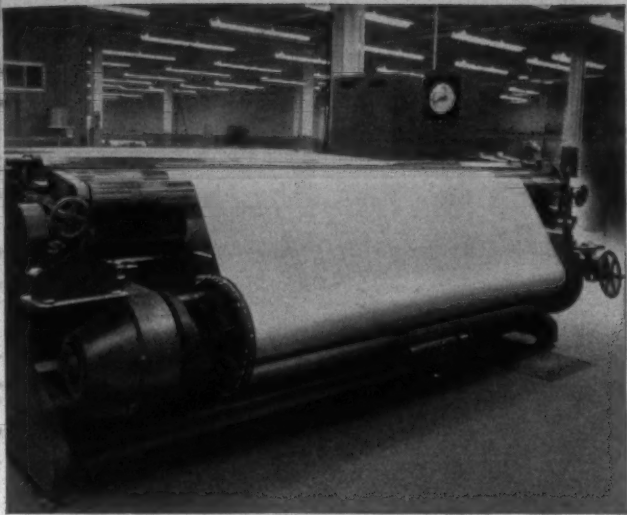
WEST POINT < *Foundry & Machine Company*
WEST POINT, GEORGIA

HIGH CAPACITY DOUBLE-SQUEEZE SIZE BOX: A "Step" toward versatility, for light and heavy warps. Double immersion rolls raise and lower on smooth cut-tooth mechanism, permit greater contact with size. Rubber-covered, pneumatically-loaded squeeze rolls; insulated vat. Steam coil and all parts in contact with size are stainless steel. Now slashing warps of over 6000 ends in one standard-width size box.

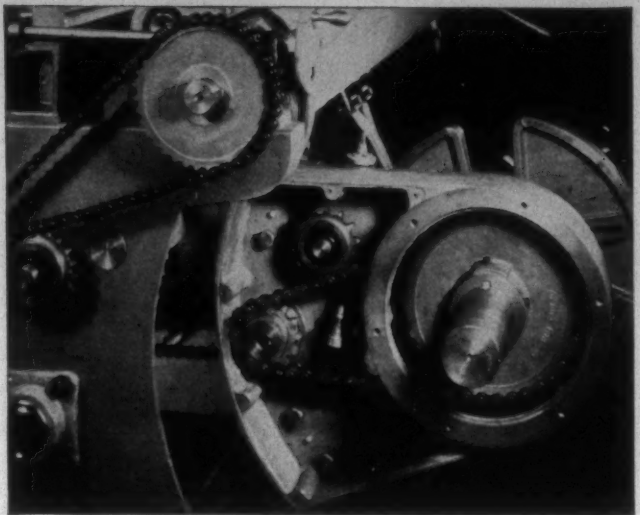


PACESETTER DRYING SECTION: The slasher with the mostest. Heaviest frame... 7" deep at one point... for today's and tomorrow's heaviest demands and highest speeds. Largest sprockets (105 teeth)... and the largest cylinder journals and bearings (2-11/16")... for longest trouble-free service life. Covered steam and condensate manifolds, neat lift-out panels for superior access to warp, clean uncluttered design.

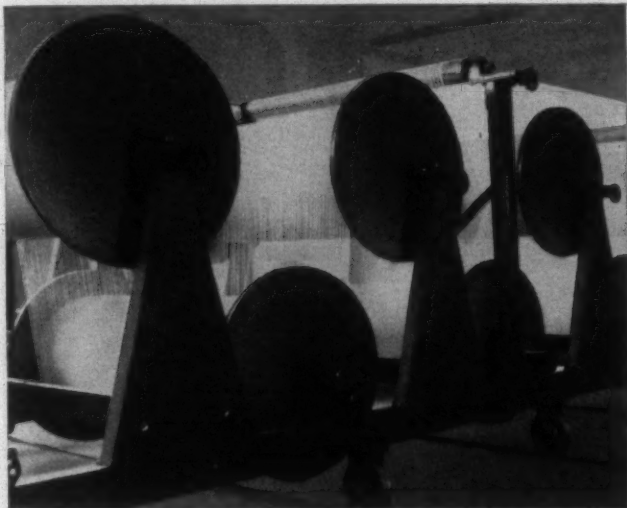




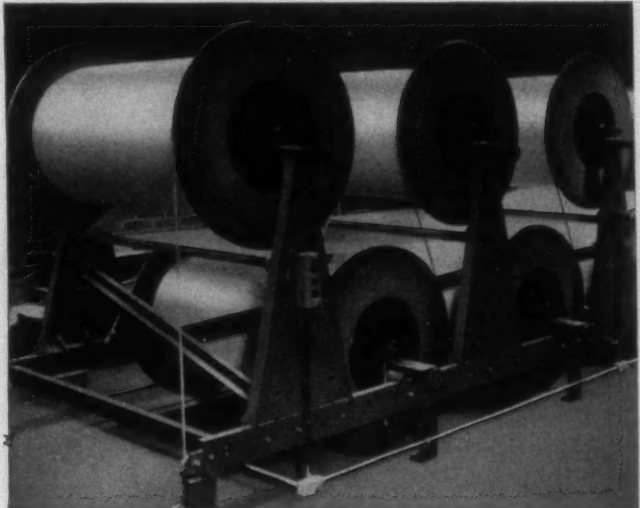
HEAD ENDS: Choice of two, either adaptable to *any* slasher drying section or size box. High Speed Single-Beam model with traversing head-stock and tailstock handles wide and narrow loom beams with over 100" in variation. No long arbors projecting in or out. Simple chain and V-belt drive. Also a Double-Beam head end for light warps.



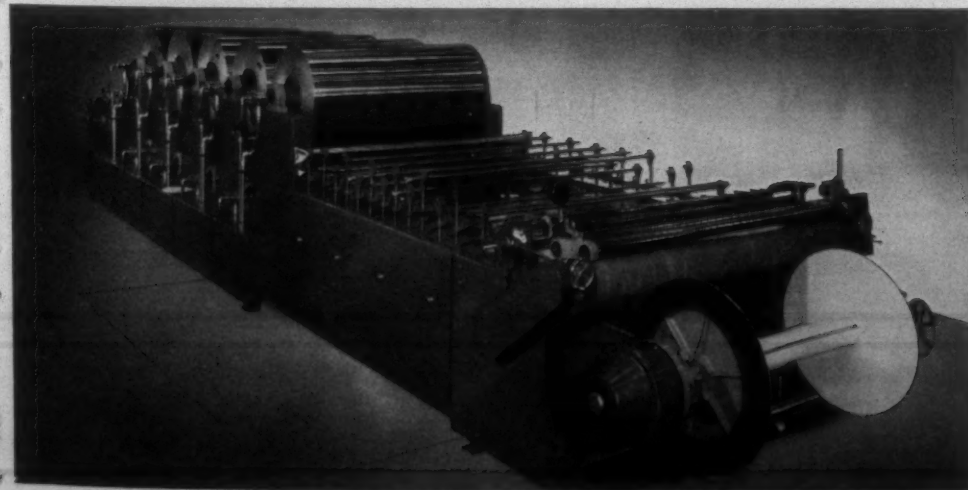
ALTERNATE INCREASING-TORQUE BEAM DRIVE: Available on either new high speed head end or double-beam head end, or can be adapted to older slasher head ends. This improved beam drive is midway between more expensive multi-motor slasher drive and earlier single-stage friction beam drives. A "Step" toward maximum economy and technical simplicity.



MAGAZINE CREELS: On heavy cast-iron stands and large roller bearing wheels. Either side-to-side or forward-and-backward movement of one creel. Available in an Over-Under (as above) or in Equi-Tension arrangement. Magazine creels fit the "Step-by-Step" concept as they are applicable to older slashers as well as to the Pacesetter. West Point's rigid quality standards assure you of years of dependable service.



EQUI-TENSION CREELS: A "Step" toward reducing waste in uneven section beam run-outs. Higher top beam stands and ball-bearing guide rolls permit drawing warp individually from each section beam for equal weighting. Since warp never passes between flanges of section beams nearer size box, selvages cannot be rolled by misalignments. Most often used with cotton yarns of 30's or coarser. Either stationary or magazine creel.



THE PACESETTER SLASHER: a proved "Step" toward more production... more profitable operation. In the past three years more mills have installed West Point slashers than all other makes combined. Whether you follow the "Step-by-Step" plan or install a complete slasher... you'll profit more if you go with West Point's Pacesetters. Make a date now with a West Point representative for a "Step-by-Step" analysis of your slasher operation.

ULTIMATE QUALITY AT MINIMUM COST . . .

THE VERTICAL "Y"

**24 INCHES WIDE
SPINNING
FRAME**

The **ONLY**
Straight-line
Spinning

No Frills



No Furbelows



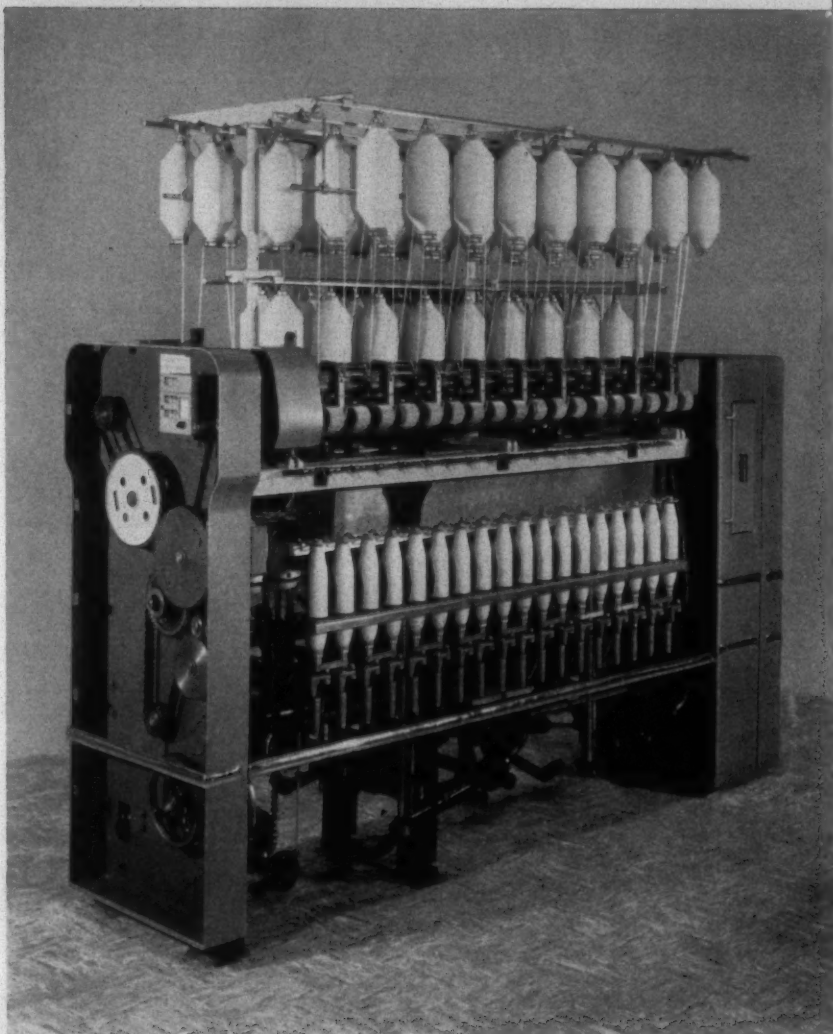
No Maintenance



No Oil



No Lint



NEW SIMPLICITY

POSITIVE CONTROL

RUGGED DESIGN

All anti-friction. Single control rings, right or left hand twist. Simplest gear drive on any spinning frame — only 12 gears and 3 chains. Positive — Simple — one adjustment traverse motion. Umbrella creels, single or double, for 10", 12", 14" bobbins.

TOMORROW'S FRAME TODAY

We invite your inquiry for further information and literature.

F. A. YOUNG

Telephone UNiversity 5-8556



MACHINE CO.

GASTONIA, NORTH CAROLINA

FLUTED ROLLS FOR SPINNING • FLYER FRAMES • COMBERS • DRAWING & LAP MACHINES • NYAF

First introduced in 1928...

1928 was a banner year! That was the year Cannon Mills Company brought out its now-famous "towel ensemble" . . . announced *colored* hand and bath towels for the first time, as well. It was back in 1928, too, that Cannon also insured *finer* product quality with another innovation . . . Amco Humidification.

In the 30 years since then, as Cannon has diversified its product line and added new manufacturing facilities, American Moistening Company has continued to work closely with Cannon in the installation of *carefully engineered* Amco Air Conditioning Systems.

Amco, of course, designs all types of systems — humidification; humidification in combination with cooling, as in a ductless evaporative cooling system; unit dry-duct systems; or central station air conditioning.

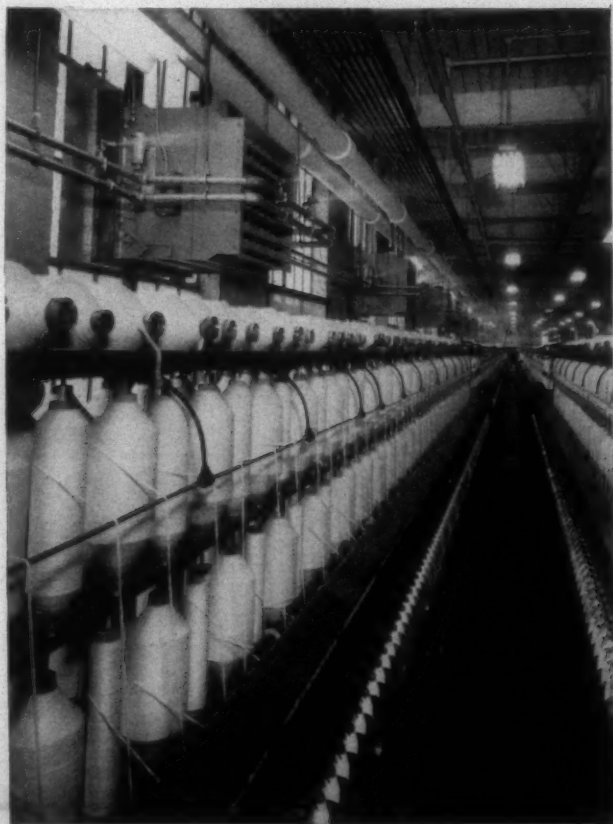
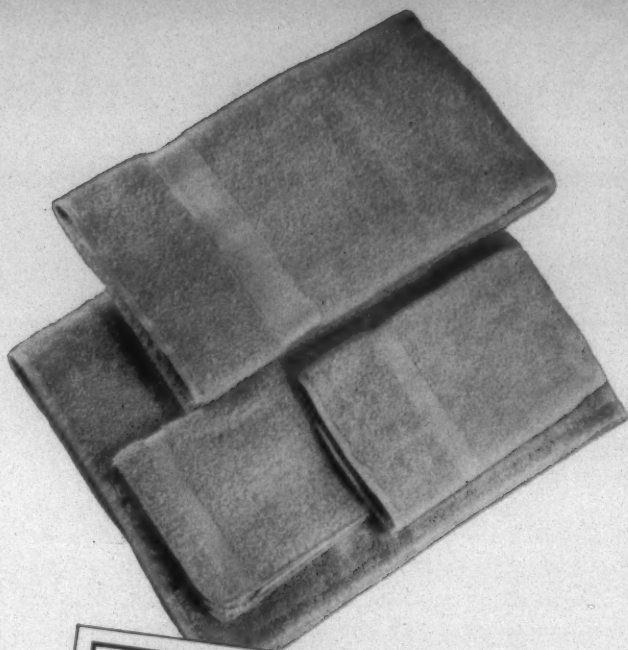
For expert advice, backed by many years of textile air conditioning experience, let an Amco engineer suggest a solution to *your* particular air conditioning problem. Naturally, there's no obligation.



Amco No. 6 Atomizer, one of many quality Amco components, produces an exceptionally fine, smoke-like spray. Its better performance and ease of maintenance make it a superior, automatically self-cleaning atomizer both for new installations and for replacements.

AMCO
SINCE 1888
AIR CONDITIONING EQUIPMENT

AMERICAN MOISTENING COMPANY • CLEVELAND, NORTH CAROLINA
BRANCHES: ATLANTA, GA. • PROVIDENCE, R. I. • TORONTO, ONTARIO



Amco ductless system of humidifying, cooling and ventilating installation in spinning room at Cannon Mills plant in Kannapolis, N. C.

NOW...the first and only exact

WHY IS 1959 LIKE 1929 A. D.?

Thirty years ago, there were a good many shrinkage claims appearing on cottons. Words like "fully shrunk," "double shrunk," "mill shrunk," "preshrunk."

The same word on two different garments could have two different meanings.

The result was chaos, and as is usual in such a situation, the makers who put out the best materials suffered most.

You know what happened. "Sanforized" came along. A standard and a label that meant what it said. It was exact assurance of minimum shrinkage.

"Sanforized" supplied the element that was lacking in the textile industry at that time—consumer trust.

And today, 30 years later, "Sanforized" is still keeping—and will continue to keep—the shrinkage problem in check, to the benefit and profit of the textile industry.

THE PROMISE OF WASH-AND-WEAR

Now the textile business has a wonderful opportunity for profits in wash-and-wear.

Wash-and-wear can be good for the industry.

There is only one question about it. Is it a short-lived promotion? Or is it the firm foundation for a bigger and healthier textile industry?

Today, the wash-and-wear situation is somewhat similar to the shrinkage situation before 1930.

Many words are being used to describe the new feature. Among them are "drip-dry," "easy-care," "no-iron," as well as "wash-and-wear." Whether the fabric performs or not, the names are the same to the public. *And again, the makers who are putting out the best-performing fabrics are the ones who suffer most from the lack of standards.*



Electronic Evaluator takes place of the human eye.

This chaotic situation prompted a number of producers to ask "Sanforized" to enter the picture... to do for wash-and-wear what "Sanforized" has done, and is doing, in the field of shrinkage.

NEW ELECTRONIC TEST METHOD

Until now, the only means of measuring the most important property of a wash-and-wear fabric—smoothness after washing—has been human judgment. Until now, there has been no exact, undeviating measure.

Now two great selling aids

• SANFORIZED •

TRADE ® MARK

Cluett, Peabody & Co., Inc., permits use of its trademark "Sanforized", adopted in 1930, only on fabrics which meet this company's rigid shrinkage requirements. Fabrics bearing the trademark "Sanforized" will not shrink more than 1% by the Government's standard test.

standard for wash-and-wear...

But now "Sanforized" announces the development of a test machine which measures electronically the appearance of wash-and-wear fabric after washing. It reports the results as a computed number.

With this new development an exact standard can be set—the same in every mill and every finishing plant.

And the last hurdle to a completely objective set of standards has been overcome.

THE PROPERTIES FOR WHICH STANDARDS ARE SET

While the most important single property of a wash-and-wear fabric is its appearance after washing, others must be tested to assure proper performance of the fabric in use.

These are the properties for which standards are set:

1. Smoothness after washing
2. Crease resistance
3. Shrinkage
4. Tensile strength
5. Tear strength

Fabrics meeting the five standards will be eligible to carry the new trademark—"Sanforized-Plus." As in the case of "Sanforized" fabrics, "Sanforized-Plus" fabrics will be regularly tested, at the mill level, throughout their production.

A NEW RUNNING-MATE FOR "SANFORIZED"

"Sanforized-Plus" starts from the highest level of public trust: "Sanforized" is a standard with more than a generation of public acceptance.

Indeed, no other trademark in the textile industry is so widely known and respected. Continuous market tests have proven its ability to sell merchandise.

PROMOTABLE AND SALABLE

For a wash-and-wear standard to be useful it must be widely advertised. It must be accepted and respected by consumers. In brief, it must sell.

"Sanforized-Plus" will sell because it is an exact standard and it delivers what it promises.

For fast and widespread acceptance of "Sanforized-Plus" by the industry and the public, we have set up a program of advertising and promotion to reach the greatest number of people in the shortest possible time.

FIRST ON MEDIUM TO HEAVY WEIGHT FABRICS

To insure a sound program and the type of service the industry has come to expect from "Sanforized," it is necessary to establish priorities.

It is not possible to start a program with the scope of "Sanforized-Plus" everywhere in the industry at once.

So at the outset, you will be seeing "Sanforized-Plus" on medium to heavy weight fabrics used in men's and women's sportswear, slacks and utility wear.

But within a very short time, the "Sanforized-Plus" label will be appearing on all types of fabrics of all weights.

WHAT IT WILL MEAN TO PRODUCERS AND RETAILERS

"Sanforized-Plus" has obvious value for everyone who makes, finishes, cuts or sells wash-and-wear.

It is a strong assurance of performance in a field that suffers from the lack of standards.

What "Sanforized" is doing for shrinkage, "Sanforized-Plus" will do for wash-and-wear.

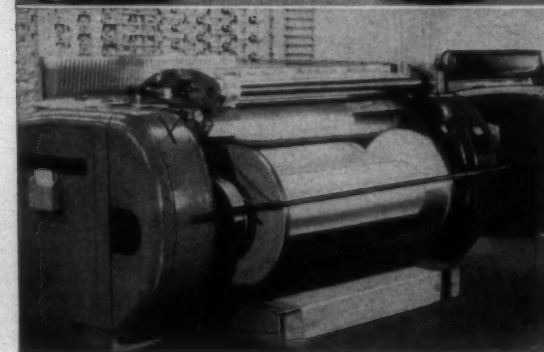
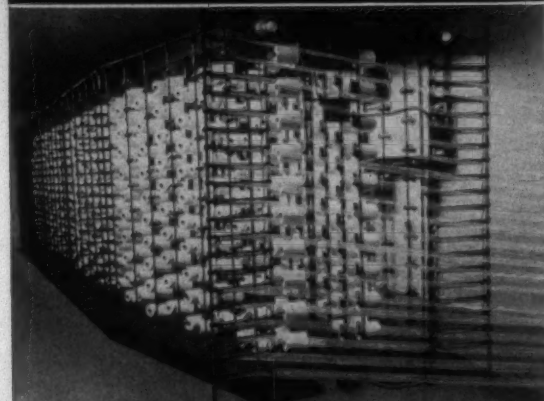
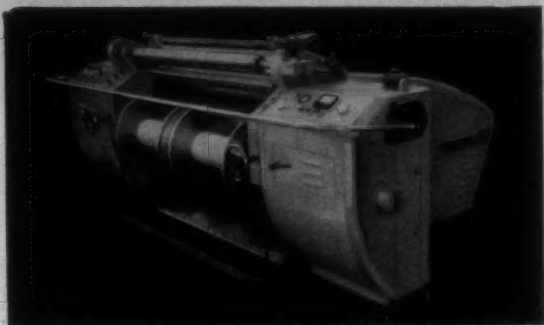
For full information, the "Sanforized" organization is at your service. Call or write directly to Sanforized, 530 Fifth Avenue, New York 36, N. Y. OXford 7-7272.

for the textile industry ...

SANFORIZED plus

TRADEMARK

Cluett, Peabody & Co., Inc., permits use of its trademark "Sanforized-Plus" only on fabrics which meet this company's established standards for shrinkage and wash-and-wear performance. Fabrics bearing the trademarks "Sanforized" or "Sanforized-Plus" will not shrink more than 1% by the Government's standard test.



THE UNBEATABLE COMBINATION

... used by more yarn
producers than any other

Leading mills everywhere rely on this equipment because of its speed, high quality production, versatility, convenience, and economy.

Cocker Tricot Warper Model MB 55-32 (Top Photo)

Handles 2-21", 1-42", 1-55" Beams, or 1-50" or 2-25" Raschel beam with simple changeover from one set to another. Individual controls, in full view and easy reach of operator. Has all modern features and safety devices. Normal sustained speeds up to 600 YPM.

Cocker Horizontal Type Magazine Cone Creels (Second Photo)

Standard creel is built to take four pound packages but can be built to take larger packages. Takes any type package. Cone holders are arranged to swing around inside the "V" for re-creeling without interfering with the operation of the machine. Equipped with electronic eyeboard stop motion. A wide range of tensions is available.

Cocker Vertical Type Magazine Cone Creel (Third Photo)

Available in true vertical or magazine... equipped for any type package. Tensions are new improved type with adjustable posts for varying tensions in the yarn. Tensions can be run on light yarns without washers, or washers can be used on one or both posts when yarn requires it. Electronic stop motion available.

Cocker High Speed Spindle Driven Warper (SD-49) (Bottom Photo)

Will handle any type yarn. Produces unexcelled synthetic warps from finest deniers to heaviest tire cord yarns. Takes section beams with flanges up to 40" dia. Produces warps of any desired density at speeds up to 1000 YPM.

Write for full information today.

COCKER MACHINE & FOUNDRY COMPANY

IN CANADA:

Contact W. S. Clark
Montreal, Canada
Oxford 7-2242

IN MEXICO:

Ing. J. Via, Jr.
I. La Catolica 45-911
Mexico, D. F.

PLANT & OFFICES at Ranlo, N. C.

MAILING ADDRESS:
Gastonia, N. C.

WORLD'S LARGEST DESIGNERS
AND BUILDERS OF COMPLETE
WARP PREPARATORY EQUIPMENT



Newest ideas in
colorful treatments

Focus your attention on colorfastness at its best with Amanthrene* Vats

Give your cottons and rayons sun-loving characteristics all season long, to meet today's carefree living requirements. Koppers Amanthrene Vats keep their promise, providing the ultimate in colorfastness to direct sunlight, salt air, perspiration, laundering and dry cleaning. These colors, unexcelled in dispersibility, penetrate smoothly

and evenly throughout fabrics to give uniform results.

For full information . . . samples . . . or a demonstration, simply contact your local Koppers representative. And remember too, our laboratory facilities and technicians are always available to assist you when you need them. We will be happy to serve you.

*REG. U. S. PAT. OFF.



KOPPERS COMPANY, INC. CHEMICALS AND DYESTUFFS DIVISION

Pittsburgh 19, Pennsylvania

(FORMERLY AMERICAN ANILINE PRODUCTS) PLANT: Lock Haven, Pa.

BRANCHES: Providence, R. I. • Philadelphia, Pa. • Paterson, N. J. • Chicago, Ill. • Charlotte, N. C. • Chattanooga, Tenn.
Columbus, Ga. • Los Angeles, Calif.

Member of Vat Dye Institute

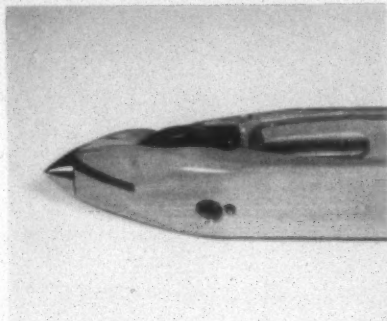
IN CANADA: Dominion Anilines & Chemicals, Ltd., Toronto, Canada • Montreal, Canada

VMA 6704

For The Textile Industry's Use

— NEW MACHINERY, EQUIPMENT AND SUPPLIES —

Reinforced Shuttle



A new reinforced XD shuttle has been introduced by the Southern Shuttle Division of Steel Heddle Mfg. Co., Greenville, S. C. The shuttle features a vulcanized fibre reinforcing strip inserted in the wood near the eye to strengthen this section and overcome splitting. (Request Item No. B-1)

Warp Sizing Products

Arnold, Hoffman & Co. announces a new range of warp sizing products, trademarked Ahcosize, to supplement its existing line of textile auxiliaries for warp sizing. The Ahcosize products are designed to meet the new demands of warp sizing imposed by the advanced technology in size preparation methods, improved wearability of the new synthetic fibers and their blends, new fabric specifications, and the finishers' demand for ease of removal in subsequent finishing processes.

The Ahcosize L series features free-flowing liquid forms of cold water dispersible warp lubricant auxiliaries which can be added to starch slurries for kettle cooking, homogenizing, jet cooking or high temperature converting. These emulsions are of extremely small particle size and are stable to agitation and high temperatures. The range of Ahcosize L products includes non-ionic, anionic and cationic emulsions; the most versatile of which, Ahcosize LS, is non-ionic, completely saponifiable and re-emulsifiable, and exhibits size mix stability at any pH.

Laboratories and manufacturing facilities are maintained by Arnold, Hoffman at Charlotte, Cincinnati and Dighton, Mass.; sales offices in Providence, R. I., Charlotte and Atlanta. Warehouse stocks of Ahco warp sizing products are available from Charlotte and Atlanta for the South and in Dighton for the North.

Established in 1815, Arnold, Hoffman is a subsidiary of Imperial Chemical Industries Ltd., England. A basic manufacturer of textile auxiliaries, Arnold, Hoffman has a broad selection of Ahco warp sizing products available to the industry, and further information, product descriptions and gen-

eral recommendations for use are available in Bulletin 2004, Ahco Warp Sizing Products, Arnold, Hoffman & Co., 55 Canal St., Providence 1, R. I.

(Request Item No. B-2)

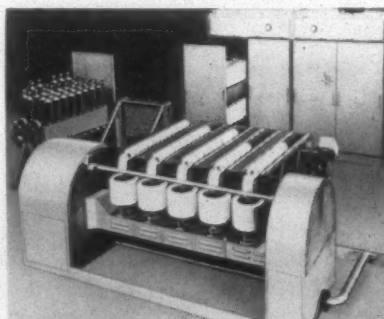
Narrow Fabric Loom

Texnovo S.p.A., Milan, Italy, has developed a new Ultratex shuttleless, narrow fabric loom. The unit is said to have a speed of 800 r.p.m. with a production rate of 90%. It will reportedly produce 4,320 yards of zipper tape in an eight-hour day. The built-in cam box has interchangeable cams and allows use of 12 shafts that can carry out all patterns involving repeat 1:8 of the cams, i.e., 1 up 1 down—2 up 2 down—1 up 3 down—3 up 1 down—4 up 4 down—3 up 5 down—5 up 3 down—2 up 6 down—6 up 2 down—1 up 7 down—7 up 1 down.

The loom has 16 patented needle weaving units for tapes and ribbons up to 1". It features a rotary filling device to insure regular supply and constant width of the tape throughout. Delivery of the looms will begin in June of this year.

(Request Item No. B-3)

Dryer For Dyed Yarns



The Scholl Secomat, a quick dryer for all types of dyed yarns, synthetic or natural, has been introduced by Cosa Corp., New York City. It is a two-unit, semi-automatic dryer. The first unit consists of centrifuges for moisture extraction, which are automatically loaded and unloaded by conveyor chutes. The second unit completes the drying process by forcing steam heated, dry air through each spool of yarn, from the inside, out.

In operation, freshly dyed spools of yarn are placed in the conveyor chutes, which are individually driven by 1/2 h.p. motors. Vibratory action travels the spools toward the centrifuges which automatically accept the spools, spin dry them at 6,500 r.p.m. for 30 seconds, and then deposit them in a lower layer of conveyors for removal to the hot-air dryer.

The Secomat accommodates up to 5 centrifuges with auxiliary conveyors. Centrifuge baskets are 6.9" high and are made in 4 widths to accommodate packages up to 8.3" O. D. Each conveyor is adjustable for specific demands. A photo-electric eye scans the whole process to prevent any chance of accident. The company reports that the approximate moisture contents of the yarns after this first process are: synthetics 15-25%, wool 25-35%, cotton 50-60%, spun rayon 70-75%.

In the dryer the yarn is subjected to a flow of hot air applied by motor driven ventilators. The air flows from the inside of the spool to the outside. The spools are loaded on spindles which are, in turn, placed and locked onto trolleys for placement in the drying chamber. Each spindle can hold 3 spools—each trolley holds up to 64 spindles of 5.5" O. D. Each row of spindles has a separate air intake which can be shut off individually. A special humidity test device tests each spindle of yarn, and shuts off air supply when the yarn reaches a pre-selected comparative dryness. The rest of the yarn in the drying chamber continues to receive air treatment until the same dryness is reached.

Temperature is thermostatically controlled for each ventilator and is adjustable up to 60 or 70° F. below that of the heating medium. Average drying times are said to range between 1/2 hour for synthetics, and 2 1/2 hours for spun rayon.

(Request Item No. B-4)

Wash-And-Wear Softener

Eastman Chemical Products has announced the development of a new type of low molecular weight polyethylene for use in the production of wash-and-wear fabrics. The compound is designated Epolene LVE and is a low viscosity, emulsifiable type polyethylene. It is useful as a softening agent in conjunction with resins used to treat wash-and-wear fabrics.

(Request Item No. B-5)

Zefran For Wool Blends

New blends of 100% Zefran acrylic fiber will be marketed by the textile fibers department of the Dow Chemical Co., Wilmsburg, Va. The new blends are designed to meet the needs for versatile acrylic-wool blend apparel fabrics. The new blends have been designated W-2 and W-4. The W-2 blend has an average denier of about 2.5. It sells for 99 cents a pound. It comprises varied staple lengths and has an upper spin limit of 8 run.

The W-4 blend has an average denier of about 4.5 and sells for 94 cents a pound. It also comprises varied staple lengths and has an upper spin limit of 6 run. Both of

ROBERTS SPINNING — ARROW M-1



THE FRAME PREFERRED BY SPINNERS

COTTON SYSTEM SPINNING

for carded and combed cotton
short and long staple

for synthetics and blends
up to 3 inch fiber lengths

yarn numbers from 2's to 120's

More than 625 of these highly productive Roberts narrow spinning frames have been bought by mills in the United States, in addition to 725 other Roberts models, all since 1956. This makes a total of 1350 Roberts frames with almost 500,000 spindles . . . unmistakable proof that Roberts Spinning is preferred by Spinners for its unmatched flexibility, higher production speeds, yarn quality and economy.

ROBERTS COMPANY, 450 Seventh Avenue, New York 1, New York
ROBERTS COMPANY DE MEXICO, S.A.; Avenida Reforma 915-A; Puebla, Pue.; Mexico
ROBOURNS-ROBERTS COMPANY, LTD.; Burton-on-Trent, Staffordshire; England

ROBERTS COMPANY

SANFORD, NORTH CAROLINA

FOR THE TEXTILE INDUSTRY'S USE—

these blends have been developed to fit into existing processing and dyeing technology standard for wool. Using conventional woolen technology, a wide range of acrylic-woolen blends can be produced. Maximum compatibility of Zefran acrylic and woolen fibers is said to be achieved by using the new blends.

All fabrications produced to date contain from 50 to 80% Zefran, a blend level area in keeping with Dow marketing policy. The two basic fiber blends make a wide range of woolen blend fabrics, including lightweight garments for men's and women's wear—mainly with the W-2 blend as well as heavier fabrics for the same markets using the W-4 blend.

Weights upward from 6 oz. suitings with firm to medium-soft finishes are being featured in this new fabric program, many of which will reach retail stores in the Fall of 1960. Heavier fabrics will highlight brushed and napped surfaces as well.

Standard wool emulsions and machine settings are said to be applicable to the new blends. (Request Item No. B-6)

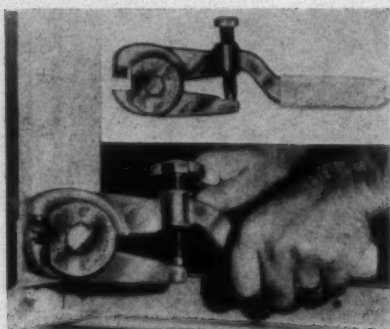
Surface Active Agents

The inorganic chemicals division of Monsanto Chemical Co., St. Louis, Mo., has added alkyl phenol-based ethylene oxide condensates to its line of surface active agents.

Interim production of the dodecyl phenol and nonyl phenol-based products is underway at the company's Kearny, N. J., and Everett, Mass., plants. Commercial production is scheduled to begin this month at Kearny and Trenton, Mich. The new products will be marketed as a part of the company's Sterox line.

(Request Item No. B-7)

Nut Splitter



H. K. Porter Inc., Somerville, Mass., has introduced the new HKP Swivel Jaw Nut Splitter for splitting and removing frozen and rusty nuts. It is designed to cut nuts up to, and including, $\frac{7}{8}$ " across flats.

To operate the unit, the swivel blade is placed against the side of the nut, the power screw is turned by hand until the jaw is tight against the nut, and then tightened with a hand or power wrench until enough pressure is applied to split the nut. The tool will not damage the bolt from which the nut is removed, and the whole procedure takes only a few seconds' time.

The swivel blade, which is made of tempered tool steel, can be turned with the fingertips to cut at any angle, in any position, even in tight quarters. The jaw, handle, jaw pivot bolt, and power screw are made of heat-treated alloy steel, with the jaws and handle being drop-forged to give them exceptional strength. The tip of the power screw is hardened and tempered to prevent "mushrooming" under the pressure needed to split the nuts. The hand grips are of plastic, for comfort and good gripping.

(Request Item No. B-8)

Electronic Controller

A new electronic controller has been introduced by Edwin L. Wiegand Co., Pittsburgh, Pa. The new PC Chromatrol Electronic Controller is designed to give highly sensitive temperature control within 1° up to 600° F. The stainless steel sensing element is a small bullet-probe $1"$ long and $\frac{1}{4}"$ in diameter. The pre-aged thermistor probe may be located in platens, in air ducts and in immersion wells up to $100'$ away from the amplifier-relay cabinet using inexpensive light-gauge twisted lead wire.

Loads up to 10 k.w. can be controlled directly without a separate magnetic contactor. The unit may be used on 120, 208 or 240 volts, 60 cycles. The scale covers dual-range from 25 to 225° F. or 200 to 600° F. The dial-plate control is removable from the amplifier-relay for remote location up to $30'$ away. Thus all controls may be mounted at a single location.

(Request Item No. B-9)

Yarn Dyeing Machines

The complete line of yarn dyeing machines, yarn drying equipment and centrifugal extractors manufactured by H. Krantz Maschinenfabric of Aachen, Germany, is being introduced in the U. S. by the Interstate Textile Equipment Co., Charlotte.

Krantz dyeing machinery is manufactured for high pressure work as well as for conventional dyeing and is available in various capacities up to 1,000 lbs. Equipment for dyeing raw stock, wool tops, dye beams, packages, etc., is manufactured to individual specifications. The firm's units cover the entire yarn dyeing field. The yarn package dyeing machinery can be used in conjunction with the Krantz Rapid Dryer making it possible to dye and dry the material without manually handling the packages. Drying time is said to be less than 60 minutes in the Rapid Dryer.

The skein dyeing equipment is reported to be ideal for Orlon, Ban-Lon and other high bulk yarns that are in popular demand today. Temperatures can be accurately controlled, it is reported, and a unique pump system assures even, gentle flow of the dye liquor throughout the machine. A special regulating device is said to make it possible to control the flow of the dye liquor in six different stages. Flow reversal can be controlled automatically at predetermined intervals.

A new patented type "gliding suspension" is standard equipment with Krantz extractors. Gliding suspension is said to practically eliminate all problems resulting

from uneven loading, reducing actual loading time and excessive wear to bearings resulting from uneven loading. Other features include a rimless basket having an extra large top opening, permitting rapid loading and unloading either mechanically or by hand.

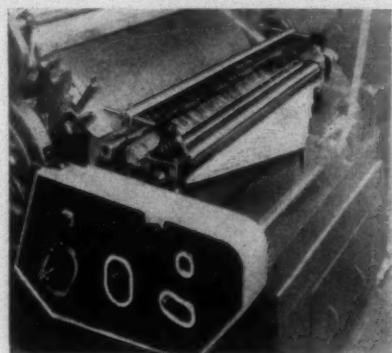
(Request Item No. B-10)

Portable Pyrometer

Illinois Testing Laboratories Inc., Chicago, Ill., has introduced a new version of the portable indicating pyrometer intended to measure temperatures between -40 and 200° F. The unit does this by means of two scales or arcs in order to provide 1° F. per scale division and therefore readability to at least the nearest $\frac{1}{2}^\circ$. A selection of interchangeable thermocouples is available, making the unit usable for different kinds of temperature measurements.

(Request Item No. B-11)

Cotton Web Purifier

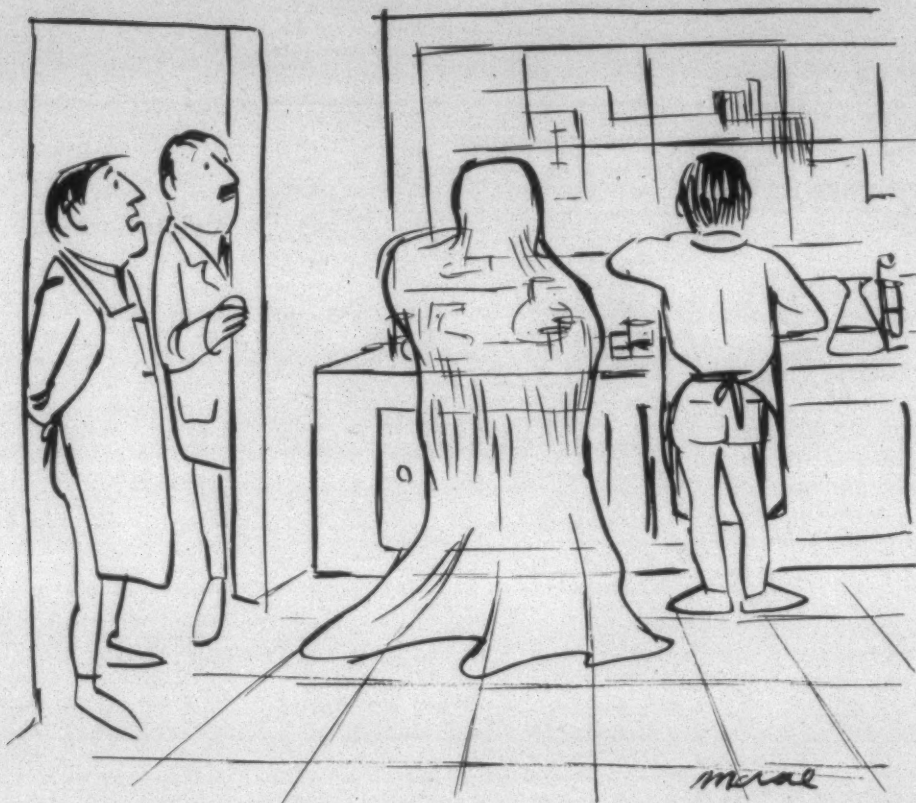


A new device known as the Crosrol Cotton Web Purifier is being marketed and serviced in the U. S. by Atkinson, Haserick & Co., Framingham, Mass. The Crosrol device is mounted on the card frame between the doffer comb and the calender rollers. It comprises a pair of precision ground, hardened steel rollers between which the full width web passes. Trash, seed and leaf particles left in the web after carding are destroyed and fall out during subsequent processing. Upgrading of cotton, decreased ends down, less yarn breakage in spinning or weaving and a clearer, more even textured cloth are said to result from use of the new device. (Request Item No. B-12)

New Dacron Yarn

A new premium type of Dacron polyester yarn, offering for the first time the luxurious hand, dyeability and printability traditionally associated with silk, along with the functional properties inherent in other types of Dacron, is now being manufactured on a limited basis by the Du Pont Co., Wilmington, Del.

Called Dacron Type 62, this new filament yarn differs from regular Dacron Type 56 yarn in dyeing characteristics and in the aesthetic qualities of hand and appearance which it imparts to fabrics. Dacron Type 62 can be readily dyed with cationic colors and dispersed colors to achieve the rich coloration normally associated with silk,



"... never saw such enthusiasm. Si always works with a spirit. . . ."

Si must be working on one of those wet-processing technical problems that you sent us.

When you do send a problem, not only does Si work with a spirit, but all of those around him join in the work with the same spirit.

What is your current problem?

Warp Sizing: Softeners, Binders, Penetrants, Ty-In Penetrants, Shuttle Dressing, Waxes.

Wet Processing Chemicals and Auxiliaries: Dye Assistants, Penetrants, Rewetting Agents, Sanforized Fabric Oils, Detergents, Scouring Agents, Softeners.

Niagara Twist-Setter: Yarn Conditioning Penetrants.

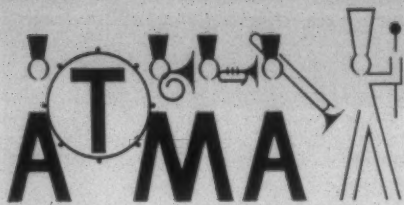
Seyco Warp Lubricator.

Headquarters for textile chemicals

SEYDEL-WOOLLEY & CO.

748 RICE STREET, ATLANTA, GEORGIA





Parade of Progress

JOIN THE PROFIT PARADE! VISIT CONVENTION HALL IN ATLANTIC CITY, N. J. IN 1960* AND SEE THE WORLD'S LARGEST COLLECTION OF ADVANCED TEXTILE MACHINERY. OVER THREE HUNDRED (300) EXHIBITORS WILL DISPLAY OVER THIRTY MILLION DOLLARS (\$30,000,000.00) WORTH OF MODERN EQUIPMENT. RECENT ADVANCES IN TEXTILE CHEMISTRY WILL BE MATCHED BY THE LATEST MECHANICAL DEVELOPMENTS.

ALL UNDER ONE ROOF! PLAN NOW TO JOIN THE "PARADE OF PROGRESS" IN 1960*.

**American Textile Machinery
Exhibition
International**



MORE THAN 300 EXHIBITORS, UNDER A SINGLE ROOF, WILL DISPLAY THE LATEST TEXTILE MACHINERY AND TECHNIQUES.

*MAY 23 - 27, 1960
ATLANTIC CITY CONVENTION HALL
NEW JERSEY, U.S.A.



FOR THE TEXTILE INDUSTRY'S USE—

according to the company. Fabrics made from it can be printed with excellent print definition, richness, and clarity of color. The hand of such fabrics is said to be dry and luxurious.

The new yarn is not expected to replace any of the current Dacron fibers. The range of fabrics containing Dacron Type 62 now under development or in limited production includes the following: (1) a variety of 100% constructions such as surahs and tafetas; (2) combination fabrics containing a warp of the new filament fiber with fillings of Orlon acrylic fiber and cotton, or other yarns; (3) cross dyed combinations of Dacron Type 62 with the available regular Dacron polyester fibers; and (4) prints on 100% constructions.

These fabrics and others in proper blend levels and constructions are said to combine beauty with the wrinkle resistance, strength, abrasion resistance and wash-and-wear properties characteristic of Dacron. They are expected to find commercial use in a variety of markets, including blouses, dresswear, and sportswear.

Type 62 is a multi-filament, semi-dull yarn now made in 40 and 70 deniers. The 40-denier, 27-filament sells for \$2.41 per lb., and the 70-denier, 50-filament sells for \$2.01 per lb. (Request Item No. B-13)

Fiber Reactive Dye

Procion Brilliant Purple H3RS has been introduced by Arnold, Hoffman & Co., Providence, R. I. The new dye is a homogeneous reddish purple which is said to feature excellent wash and light fastnesses. It is said to build up well to deep shades. It is an H type Procion dye, and therefore requires steaming for fixation after printing, but its lower reactivity contributes to its very good print paste stability.

In dyeing operations Procion Brilliant Purple H3RS is said to exhibit very good wash, light and perspiration fastness on cotton and viscose rayon, and good fastness to hypochlorite on cotton. It is highly volatile and therefore particularly suitable for padding applications, but it can be applied also by any of the methods generally recommended for Procion H brand dyes. In batch dyeing techniques the new dye shows good color value and good building up properties on viscose rayon, and moderate affinity for cotton, Arnold, Hoffman reports. The color is not dischargeable.

(Request Item No. B-14)

Electric Voltmeter

Improved readability and a 40% increase in accuracy are claimed for a new a.c. voltmeter announced by General Electric's instrument department, West Lynn, Mass. Calibrated from 110 to 130 volts, the instrument is intended for applications where holding voltage to a high degree of accuracy is required.

Company engineers report that extremely high readability is made possible because the dial is calibrated in 1/2 volt intervals. This, combined with nearly linear spacing

throughout the full scale, is said to permit fast, accurate readings.

With its accuracy increased from 0.5 to 0.3% of mid-scale value, the new meter provides readings accurate to within plus or minus 0.36 volts.

The new instrument uses a General Electric milliammeter element fed by a Zener diode circuit, which spreads 110-130 volts over 95% of the scale length. It is available for both 50/60 and 400 cycle duty, and has a response time of 2 seconds. Two flange dimensions may be obtained: 4 1/4" (7.1" scale length) and 8 3/4" (14.2" scale length).

(Request Item No. B-15)

Nylon Core Belt

An improved nylon core belt known as Nycor Texbelt is now being produced and furnished endless by Graton & Knight, division of L. H. Shingle Co., Worcester, Mass.

The new Texbelt is the product of "integrated nylon construction." Its chrome leather pulley ply is designed to assure maximum coefficient of friction. The oriented nylon center ply is said to provide extremely high tensile strength and virtual freedom from stretch. Nylon fabric outside ply affords outstanding flexibility and protective toughness, the manufacturer reports.

This combination of virtues is said to make possible the maintaining of optimum effective tension on fixed center drives. High coefficient of friction and freedom from stretch are said to eliminate slip and maintain production. No take-ups are necessary. Shock loads are absorbed without damage to belt or machinery.

Nycor Texbelt is furnished endless with smooth, factory made laps. It has no mechanical fasteners to cause wear at crossing of belts or to act as lint catchers. Lightweight construction also reduces cost without decreasing strength or resilience. The belt is engineered specifically for the textile industry—especially for lickerin and doffer drives.

(Request Item No. B-16)

New Fabric Softener

A new cationic fabric softener, Durafluff, is available from Manufacturer's Chemical Co., Philadelphia, Pa. The new material is said to give fabrics a soft, silky hand with good drape together with increased abrasion resistance (up to 75% more than untreated fabric, the manufacturer reports). It also improves sewability, reduces needle cutting, and increases tear strength.

It can be applied in dye becks, paddle dryers, or washers. The usual amount applied is 3 to 4% on the weight of the goods. Standard equipment is used for extraction and drying.

(Request Item No. B-17)

Nylon Green

A new Nylanthrene green dyestuff for nylon stock, yarns and piece goods has been introduced by Althouse Chemical Co., Reading, Pa. Designated as Nylanthrene Green 2GFL, the new dye is said to provide dyers and finishers with a more positive approach to true green. Level dyeing

Announcing a control program that means something to you!
THE CHEMSTRAND CORPORATION, MANUFACTURER OF ACRILAN*
ACRYLIC FIBER, ANNOUNCES A LICENSING PROGRAM FOR ITS
REGISTERED TRADEMARK



With consumers, retailers, cutters, convertors and millmen alike, no fiber has achieved a higher reputation than Acrilan—the acrylic fiber made by The Chemstrand Corporation. Now, to protect that reputation—and also to protect you and your customers—Chemstrand announces a licensing program that will insure that all fabrications carrying the A-Acrilan trademark, as illustrated, contain not less than a specified percentage of Acrilan.

This program provides for the licensing of this trademark as an “ingredient mark.” This means that it can be used only on fabrications containing Acrilan acrylic fiber in those percentages that provide maximum utility, quality fashion and great consumer value. The percentages required will be approved by The Chemstrand Corporation.

To carry out this program the following controls will be instituted:

1. Mills or convertors wishing to use this trademark on a fabrication must submit samples of the finished fabrication to The Chemstrand Corporation for testing.

2. If the fabrication meets the standards of The Chemstrand Corporation, the mill or convertor will be granted permission to use, and authorize their customers to use, this trademark on that fabrication and products made therefrom as an ingredient trademark.
3. Chemstrand will from time to time purchase articles bearing this trademark and test such articles to determine whether the fabrication is a duly licensed fabrication and contains not less than the required percentage of Acrilan.

Millions of viewers see the A-Acrilan trademark on coast-to-coast network TV...millions more see it constantly in America's leading magazines and major newspapers. This control program means that the multimillion-dollar advertising that Chemstrand puts behind Acrilan will work specifically for *you!* For further information on this important new control program, write the Merchandising Dept., The Chemstrand Corporation or call OX 5-5100, Ext. 264.

Chemstrand makes only the fiber; America's finest mills and manufacturers do the rest.

*Registered trademarks of The Chemstrand Corporation for its acrylic fiber.

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FOR THE TEXTILE INDUSTRY'S USE—

throughout nylon piece goods is said to be possible with the new dye. It can be applied to dress fabrics, lingerie, draperies, automobile upholstery fabrics and carpeting.

In Launder-Ometer tests, the dyed fabrics showed no staining on fibers, at 140° F. wash. The Fade-Ometer tests showed a good 7-8 rating with no breaks in shade.

Nylanthrene green is said to exhaust well in neutral bath and to have superior pile-on properties. Application-wise, it can be used on all types of dyeing equipment by following the usual dyeing procedures for Nylanthrene dyes.

The shade is said to be much brighter than those obtainable with the usual neutral dyeing fast nylon colors. The dye reportedly achieves a fastness rating in a single green application which is superior to those currently obtainable from mixtures of blues and yellows. (Request Item No. B-18)

Carpet Nylon

The nylon division of Industrial Rayon Corp., Cleveland, Ohio, has announced the introduction of a new bulked nylon filament yarn which will be marketed under the trade-name Nyloft. The new yarn has been developed specifically for use in the manufacture of floor coverings.

Fabrics made with Nyloft are said to have very favorable loft and cover, an attractive luster, and to possess excellent resilience. Carpets made with Nyloft are free of pilling, can be easily cleaned and provide extraordinary wear. Nyloft yarns also are said to be particularly well-suited for the new textured effects which are being developed for carpets.

At the present time, Nyloft is being produced on a limited basis. Facilities for expanded production at the company's nylon plant in Covington, Va., are currently being installed, the company reports.

(Request Item No. B-19)

Pre-Metallized Dyes

Althouse Chemical Co. has developed a new line of dyestuffs, called Lanafast, for application on wool, nylon, Creslan, Zefran and Acrilan fabrics as well as mixtures and combinations of these fibers. These dyes are said to have superior light and wet fastness properties. The Lanafasts are said to be

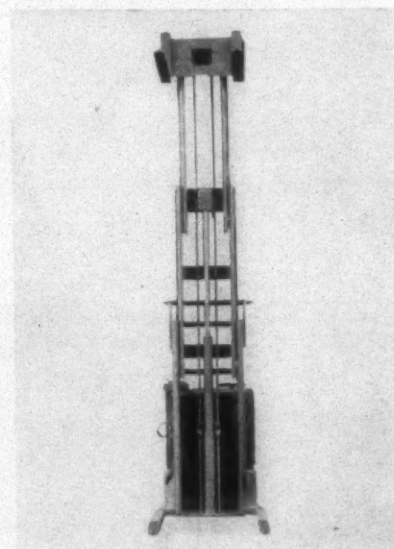
especially suitable for upholstery, carpets, men's and ladies' suitings and sportswear fabrics over a wide range of fashion shades.

The dyes are said to meet all fastness specifications for upholstery and carpeting fabrics, and are said to show a 7-8 Fade-Ometer rating with no break in shade. Excellent washing and fulling fastness is offered by the dyes, according to Althouse.

Lanafast pre-metallized dyes may be used in conjunction with each other for the production of compound shades since they have similar dyeing and fastness properties. Application of these dyestuffs is carried out with standard application procedures.

(Request Item No. B-20)

Narrow Aisle Truck



A new Tri-lift mast design on 24-volt narrow aisle trucks enabling operation in 6' wide aisles—the tiering of loads up to 180" high—and operation through 7' high doors, has been announced by Lewis-Shepard Products Inc., Watertown, Mass.

The Tri-lift mast design has capacities up to 3,000 lbs. and a full free lift of 48" enables loading and unloading operations in low ceiling deliver vehicles.

The new Tri-lift mast is said to make possible extra high stacking in storage areas to take full advantage of present warehouse space. When installed on 24-volt narrow aisle trucks it is possible to decrease operating aisle space to 6'.

(Request Item No. B-21)

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COTTON Combed & carded	NYLON Spun & filament
WOOL	RAYON Spun & filament
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struction throughout—they run longer without part replacement.

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For the Mill Bookshelf

Desizing Manual

The industrial products division of the Pabst Brewing Co. is offering a revised version of its "Desizing Manual," a 12-page booklet which discusses the application of Pabst desizing agents—Exsize, Super Exsize, Exsize HA and Dry Exsize—in the textile industry. The booklet presents a brief outline of the more commonly used textile mill processes, especially as used with cotton, with emphasis on the importance of desizing.

(Request Item No. B-22)

Appointment Calendar

Free copies of a new appointment calendar for 1960 are now available from Hinde & Dauch Division of West Virginia Pulp & Paper Co., Sandusky, Ohio. The 17 x 11" calendar features a small block of space for each day, allowing room for notes. The months may be displayed a quarter or half year at a time. (Request Item No. B-23)

Fiber Labeling

"How to Cut Costs and Increase Profits Through Textile Fiber Labeling," a booklet explaining economies which can be achieved in the labeling of textile fiber percentages, has been published by Dennison Mfg. Co. of Framingham, Mass.

(Request Item No. B-24)

Leak-Proof Pumps

Fostoria Corp., Huntingdon Valley, Pa., has published a new 4-page, 2-color Chempump Bulletin 1100 describing complete line of seal-less pumps for leak-proof pumping. The bulletin covers design, operation and selection of the proper "canned" pump. Chempump seal-less pumps are said to eliminate costly leakage by combining pump and motor in a single leak-proof unit. The line includes units for system pressures up to 500 p.s.i. and temperatures ranging from cryogenic regions to over 1,000° F.

(Request Item No. B-25)

Variable Speed Pulleys

A full line of variable-speed pulleys—plus related equipment including compound drives, motor bases and frames, wide V-belts and sheaves—is described in a new 24-page illustrated technical catalog from Hi-Lo Mfg. Co., Chicago, Ill. Information includes selection and operating data, horsepower, ratings, dimensions and representative applications for the wide variety of sizes and models.

The variable-speed pulleys are the cam-operated type which are said to positively maintain desired speed even under overload conditions. They range from fractional to

5 h.p. with speed ratios from 1.75:1 to 2.6:1. Five wide V-belt pulley models with speed ratios of 3 to 1 and two high-ratio types providing ratios up to 7.2:1 are also included.

Dual ratio compound drives employ mating variable-speed pulleys and a movable countershaft motor base to obtain speed ratios up to 6.75:1. Motor frames listed fit standard N.E.M.A. motors and adjustable motor bases are especially designed for use with variable-speed pulleys. In addition to a range of wide variable-speed V-belts, the bulletin covers three types of cast iron wide V-belt sheaves. (Request Item No. B-26)

Oilers



A new catalog illustrating and describing its entire line of oilers, safety cans, and oil and gasoline containers has been released by Eagle Mfg. Co., Wellsburg, W. Va. The catalog is available in two forms, No. 60 General Catalog, and No. 60-C Condensed Catalog.

(Request Item No. B-27)

Rust And Corrosion Control

"New Color Horizons" is the title of a 38-page systems catalog released by the Rust-Oleum Corp., Evanston, Ill. The publication is said to be a comprehensive treatise on rust and corrosion control by protective coatings.

Featured in the manual is the Rust-Oleum New Color Horizons System that is said to stop rust through a system of specially formulated primers and colorful top coatings. The catalog lists 67 actual color standards in the system.

Other important Rust-Oleum systems described in detail are the Rust-Oleum water resistant system, heat resistant system, floor coating system, heavy-duty chemical resistant system, galvanized metal coating system, wire fence roller coating system, and the new Rust-Oleum Speedy-Dry System featuring coatings that dry in less than 30 minutes.

The publication includes 76 full-color application photos and 110 color chips to show actual colors at a glance. Special technical data section features complete information on surface preparation, types of surfaces, application techniques, how to estimate gallonage for various sizes and shapes, glossary of terms, mixing, thinning, and drying information.

(Request Item No. B-28)

Maintenance Cleaning

"A Guide to More Efficient Cleaning in the Textile Industry" is the title of a new booklet recently published by Oakite Products Inc., New York City, manufacturer of industrial cleaning compounds and equipment.

(Request Item No. B-29)

Speed Recorder

General Electric, Schenectady, N. Y., has issued a 4-page bulletin, GET-2741-3A, discussing application, features, principles of operation and specifications of its Type HF multi-range strip-chart speed recorders. The bulletin includes application diagrams, a schematic of the recorder, and a description of accessories available.

(Request Item No. B-30)

Automatic Package Boilers

Useful tabulated data on 35 models of Continental automatic package boilers ranging from 15 through 600 h.p. sizes are contained in a new 4-page bulletin, BE-400, published by Boiler Engineering & Supply Co., Phoenixville, Pa.

(Request Item No. B-31)

Zinc Coating

Amercoat Corp., South Gate, Calif., has published a bulletin describing its Zinkote self-curing zinc coating. Zinkote is a 100% inorganic that is said to give bare steel complete protection from water, severe weathering, salt spray and abrasion. Applied in a single coat only a few mils thick, it cures itself to metallic hardness and adheres permanently. Zinkote is said to be unaffected by solvents and is not flammable, volatile or toxic. It may be used on steel structures or members of any size, before or after erection, and is applied with regular painting equipment.

(Request Item No. B-32)

Adjustable Speed Drives

Extensive information on General Electric Co.'s new Kinatrol line of eddy current coupling adjustable speed drives for 5 to 100 h.p. is contained in a new bulletin.

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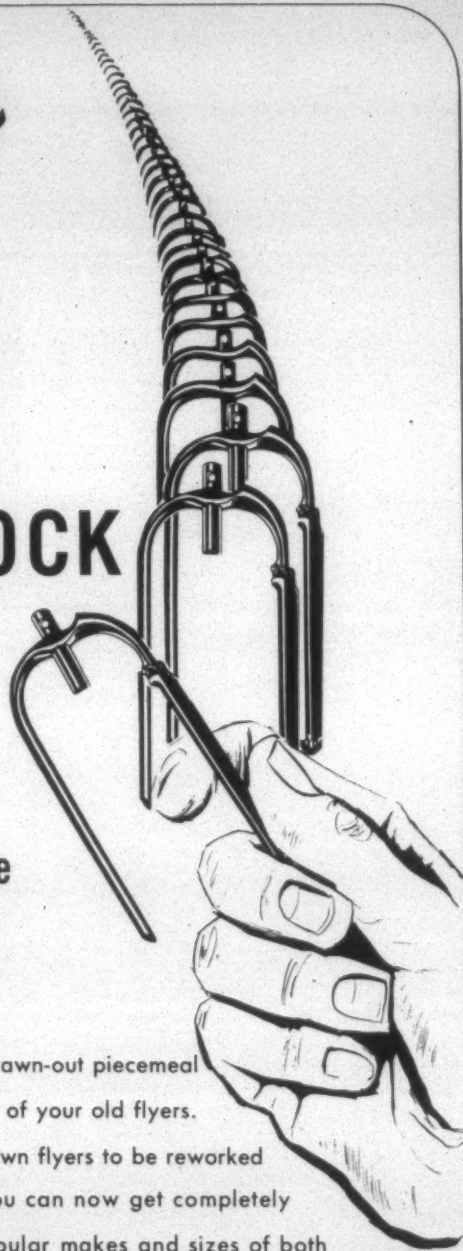
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FOR THE MILL BOOKSHELF

tin, GEA-6885. The 2-color 12-page publication contains information on the eddy current coupling operating principle, as well as data on torque capabilities, regulation and operation of the entire packaged drive which includes the main drive unit, control enclosure and the operator's control.

Cross-sections and drawings outline the construction feature which is said to permit these adjustable speed drives to operate over long periods of time with little or no maintenance. Charts indicate drive unit dimensions, ratings and data, as well as dimensions of the control enclosure and operator's control. (Request Item No. B-33)

Textile Stickers Offered

Over 30,000 stickers promoting textile products made in the U. S. have been distributed within the textile industry during the past year. The colorful stickers which say "Made in U. S. A.—Gives Quality You Can Trust" are available without charge in reasonable quantity. Large quantities are offered at cost as a public service by Stowe-Woodward Inc., Newton Upper Falls, Mass., and Griffin, Ga.

(Request Item No. B-34)

Gas-Powered Fork Truck

A 4-page color brochure, Bulletin No. SS-2060, giving dimensions and engineering specifications of the Clarklift C-25, a gas-powered fork truck of 2,500 lbs. capacity, is available from the industrial truck division of Clark Equipment Co., Battle Creek, Mich.

Drawings illustrate construction and operational features. A grade and drawbar pull chart and upright dimension table are included. The C-25 is equipped with cushion tires for indoor work, and has all standard Clarklift features.

(Request Item No. B-35)

Guar Gum

A new edition of a 16-page booklet titled "Jaguar—Guar Gum by Stein Hall" is being offered by Stein Hall & Co., New York City.

The booklet contains additional information about the physical and chemical properties of guar gum gained by Stein Hall in the period following publication of their first edition in 1956. New sections contain such information as Jaguar's viscosity vs. shear rate, electrolyte compatibility, properties as a settling, filtering and flotation agent and the effect of temperature on its viscosity. (Request Item No. B-36)

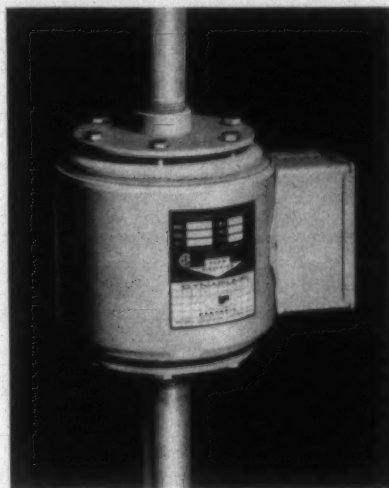
Fiber Act Guide

The Jackmeyer Corp., New York City, has prepared a 20-page "Fiber Law Guide Book" which interprets the new Textile Fiber Products Identification Act. The new publication is said to provide valuable information that will help avoid costly mistakes in complying with the law.

Jackmeyer produces a miniature print-your-own label press called the "Jackmite." The unit prints the basic label and imprints any required identification right in the plant in any quantity desired. The company also designs and produces many types of tags and labels in every type of material.

(Request Item No. B-37)

Canned Pumps



Chempump Division of Fostoria Corp. is making available Bulletin 1080, a 4-page, 2-color publication which describes a new series of 2-stage, high-head leak-proof "canned" pumps for heads up to 600', temperatures to 850° F., and pressures to 3,500 p.s.i. (Request Item No. B-38)

Materials Handling

How a major textile plant achieved a flexible handling system that offers a faster and more efficient operation—in spite of highly specialized handling problems—is the subject of a new Case History Bulletin available from Lewis-Shepard Products Inc., Watertown, Mass.

The 2-color, 6-page presentation designated as Case History Bulletin 222-1 is fully illustrated with a series of action shots taken at the plant. All phases of the operation are described by photos and fully explained in the text.

(Request Item No. B-39)

Control Valve

Monotrol, a new single control valve for zeolite softeners, ion exchange units and filters, is the subject of Bulletin WC-122, available from Graver Water Conditioning Co., New York City.

(Request Item No. B-40)

Variable Speed Sheave

Bulletin No. 6102, recently released by T. B. Woods Sons Co., Chambersburg, Pa., pictures and describes new stationary control SVS variable-speed sheave for standard V-belts. The patented, positive-locking SVS sheave is available with 2, 3 or 4 grooves. The bulletin covers its non-freezing construction, method of installation, easy speed

change and other features. An exploded view shows and labels the various components. Tables are given to aid in the proper selection of SVS variable-speed sheaves and companion sheaves. Sure-Grip companion sheaves and Quick-Slide motor bases are also covered in this 8-page, 2-color, letterhead-size bulletin.

(Request Item No. B-41)

Man-Made Textile Encyclopedia

Textile Book Publishers has announced publication of its *Man-Made Textile Encyclopedia*, described as "the first fully definitive account of the workings of the entire man-made fiber and textile industries." The encyclopedia is designed to serve every interest in the man-made textile industry, from chemical raw materials to garment manufacture, renovation, marketing, and economics.

J. J. Press, chief of the Textile Branch of the U. S. Navy Clothing & Textile Research Laboratory, is editor-in-chief of the encyclopedia and has worked in close association with the international group of 149 textile experts who have contributed to the work.

The book contains 944 pages, 8 1/4 x 11 1/4 in a two-column format, and is illustrated throughout with 561 illustrations and 370 charts and tables. The volume sells for \$27.50 and can be obtained from Textile Book Publishers Inc., 250 Fifth Ave., New York 1, N. Y.

Labor Law Report

The benefits provided for management in the new 1959 Labor Law are now fully set forth in layman's language in a new report just issued by the Labor Relations Institute, a national employer, membership organization. The report is available for \$1.00 from the Membership Service Division of the Labor Relations Institute, P. O. Box 306, Millington, N. J.

A.S.T.M. Textile Standards

The 1959 edition of textile standards developed by Committee D-13 of the American Society for Testing Materials has been published by the society. The 924-page, hard-cover volume provides methods of tests, tolerances within which textiles must come in order that they shall constitute good delivery on contract and specification requirements—standards of quality.

The new edition contains 134 standards of which 23 are new, revised or have had their status changed recently. Included are terms, definitions, specifications for testing machines, methods for humidity testing, sampling, interlaboratory testing, quantitative and qualitative analysis, resistance to insect pests and micro-organisms, fibers, yarns, threads and cordage.

Also included are standards for fabrics, nonwoven fabrics, hosiery, carpets, tire cord, asbestos textiles, bast and leaf fiber textiles, kraft yarns, cotton textiles; glass, man-made fiber and wool textiles.

Copies may be obtained from A.S.T.M. headquarters, 1916 Race St., Philadelphia 3, Pa., at \$8.50 each.



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Serving The Textile Industry

Chemstrand To License A-Acrlan Trademark

The Chemstrand Corp., New York City, has announced the institution of a licensing program for the company's A-Acrlan registered trademark. Formerly an identifying signature for the company's acrylic fiber, Chemstrand's A-Acrlan trademark will now be an "ingredient mark" under the terms of the trademark licensing program. This will permit its use only on fabrications and products which contain virgin Acrlan acrylic fiber in percentages established or approved by Chemstrand and determined to provide maximum utility, quality fashion and consumer value.

Mills and converters are invited to employ the trademark on their products when they meet established standards which will be in keeping with the intended end-use of the products. Once the products have met the standards, Chemstrand noted, authorization for the mills' and converters' customers to use the trademark on their fabrications and products will be possible as part of the program.

To alert the industry about its A-Acrlan registered trademark licensing agreement, Chemstrand will launch an extensive advertising, promotion and publicity program in various trade publications throughout the coming months.

Chemstrand also noted that the new program, while substantially altering the use of the trademark, will in no way affect its physical characteristics. The new program will not change any other trademark programs of the company for its acrylic fiber, such as those for Acrlan carpet and upholstery fabrics.

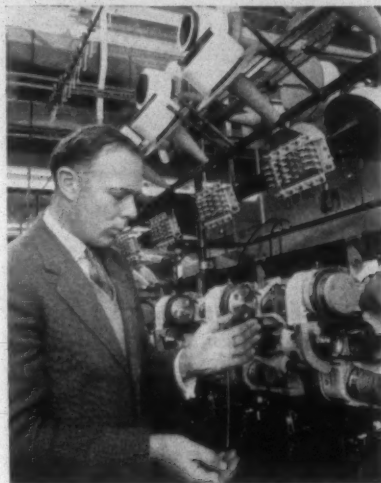
Deering Milliken Research Develops Textured Dacron

Deering Milliken Research Corp., Spartanburg, S. C., announces that it has successfully textured and developed Dacron filaments with complete uniformity. Russell B. Newton, president of the textile research organization, said the process to texture nylon filaments into Agilon yarns has been applied successfully to the polyester filaments.

"The special controls built into the texturing equipment can provide in textured Dacron yarns the quality and uniformity of Agilon nylon yarns which have been proved in hosiery and tricot fabrics," Newton declared.

"Polyester yarns," he continued, "have been recognized as having the greatest degree of wrinkle-resistance and stay-fresh characteristics of all fibers. Now that these filaments can be textured, Dacron yarns will benefit from a vastly superior hand and added appearance, as well as the inherent advantages of filament yarns."

Dacron filament will be processed on



G. C. Evans, head of the Agilon yarn department of Deering Milliken Research Corp., examines Dacron filaments which have been bulked on the texturing and developing unit of equipment in the research organization's pilot plant. Untextured Dacron filaments are being fed from creels above his head into the equipment.

equipment designed by Milliken Research for medium denier textured yarns. The texturing equipment, which can be used for nylon or Dacron filaments, is being constructed by Hobourn Aero Components Ltd., precision machinery manufacturers of Rochester, England.

Milliken Research does not manufacture any of the products which it develops but licenses manufacturers throughout the world. Royalty schedules for conventional Agilon yarns of nylon or Dacron are now set at \$3 a pound for filaments of 6 to 13 deniers; \$2 a pound for 14 to 17 deniers; and 4% of the price of raw materials in the U. S. for all deniers higher than 17.

Saco-Lowell Shops Shows Fiscal Improvement

After reflecting non-operating adjustments recorded in the fourth quarter, in the net credit amount of approximately \$500,000, Saco-Lowell Shops showed a small net profit for the second consecutive quarter, according to Thomas J. Ault, president.

Results for the last half of fiscal year 1959 showed a marked improvement over the first half when a loss of \$2,119,336 was reported. Losses to be reported for the 12-month period, after reflecting total favorable non-operating adjustments of approximately \$600,000, are slightly less than \$2,000,000 compared to a \$5,142,730 loss in 1958.

The first-half loss was occasioned primarily by the heavy tooling and start-up expenditures involved in the move of the company's textile machinery operations from Maine to the South. The second-half

results were made in the face of heavy start-up expenses on new military orders in the automotive division, as well as heavy tooling expenditures incident to the introduction of several new textile machines in the South—both of which will continue until the projects are completed in the first half of 1960.

Ferguson Gear Installs Comparator

Ferguson Gear Co., Gastonia, N. C., has installed a Jones and Lamson PC-14 optical comparator which will enable it to designate gear tolerances to most exacting manufacturing specifications. The PC-14 comparator brings into sharp focus many facets of quality gear inspection which cannot be measured or compared by any other means, Ferguson reported.

Proctor & Schwartz Merger Approved

The merger of Proctor & Schwartz and its subsidiary, Proctor Electric Co., Philadelphia, Pa., with the Silex Co., Chicago, Ill., has been approved by the directors of all the companies. The new firm would be known as Proctor-Silex. Silex and Proctor Electric are producers of housewares. Combined sales of the three companies for the year ending December 31, 1959, are estimated at \$34 million. The present management of all three companies is to continue, it was reported. Proctor Electric is 85% owned by Proctor & Schwartz.

U. S. Chemical Trademarks Listed By Cheminform

Registered U. S. chemical trademarks have now been cataloged in the files of the Cheminform Institute, Coliseum Towers, New York City 19. In addition, the institute has listed unregistered trademarks, common, generic and trivial names and synonyms of chemicals, coatings, fibers, plastics, plasticizers, emulsifiers, lubricants, pigments, dyes, surfactants, detergents, resins and chemical compositions for use in all industries. The chemical composition, use and manufacturers are given. Foreign products are included. A leaflet describing this information service is available from the institute.

American MonoRail Reports Sales Increase Of 20%

The American MonoRail Co., Cleveland, Ohio, reports a 20% increase in sales of its engineered handling equipment for industry in 1959. With sales and income both higher than 1958, costs of relocating the plant in new facilities in a Cleveland suburb were charged against the year's op-



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1960

SERVING THE TEXTILE INDUSTRY—

eration and are reflected in net income per common share of 27 cents as compared with 26 cents in 1958.

Sales reached \$5,739,082, against \$4,790,463 previously. Principal reasons given for this improvement were: increase in capital expenditures by industry in general; excellent acceptance of new textile industry products developed by MonoRail; and continued growth of MonoRail's conveyor division. Net income, before taxes and non-recurring moving charges, was 160% over 1958.

American Viscose Reports Good Year In 1959

The American Viscose Corp., New York City, reports that 1959 was a good year for itself and its jointly owned subsidiaries. Production of American Viscose fibers overall was up approximately 10% over 1958. Sales of yarns and fibers for industrial uses, not including tire yarns, doubled in 1959. However, total sales of rayon staple fiber during 1959 did not improve over 1958 because of severe competition from foreign imports, according to the company. Fiber production is expected to continue at the same level through 1960. The company also reports continued improvements in its other lines.

The Chemstrand Corp., one of American Viscose's equally owned subsidiaries producing acrylic and nylon fibers, enjoyed

similar gains. The Ketchikan Pulp Co., another jointly owned subsidiary, produced more pulp than ever before in its ten-year history.

AviSun Inc., the corporation formed during 1959 in equal partnership with Sun Oil Co. to produce the new polypropylene polymers, fibers and films, went into initial production of the polymer and packaging film before the end of the year and began producing fibers in January.

Equipment Being Developed For New Unifog Process

The Du Pont Co. has entered into a one-year agreement with the Binks Mfg. Co. of Chicago, Ill., and the Greenville Steel & Foundry Co. of Greenville, S. C., to develop equipment and processes required to facilitate its recently developed Unifog spray process for applying finishing agents to textiles.

The Unifog process should prove to be versatile, more economical, and faster than methods now being used by the textile industry, according to Du Pont's dyes and chemicals division. The new process is said to eliminate the need for drying equipment in some finishing operations, to cut wastage of chemicals, and to produce a more uniform deposit of finishing agents, giving fabrics generally a fuller hand and better sewability.

Under the agreement entered into by the three firms, the Binks Mfg. Co. will develop nozzles and control equipment required for

spray application of dyes and treating agents. The Greenville Steel & Foundry Co. will develop and provide equipment required for handling of textile chemicals under the new process. Du Pont, which announced development of the process last month, will furnish chemical treating agents required for use in the process.

First commercial models of air-operated spray equipment, which substitutes a series of compact, lightweight "mistifiers" for the usual more cumbersome and expensive padding rolls, are now available. These are adaptable for use with aqueous solutions, dispersions and emulsions. Steam-operated units are under development and should be available within a year.

Virginia Cellulose Establishes New Sales Office

A new sales office has been established in Charlotte by the Virginia Cellulose Department of Hercules Powder Co., Wilmington, Del. George S. Baird will be in charge of the office, which is located in the Wachovia Bank Building. The sales and technical service of CMC, CMC warp size, and cotton linters in the Southeast will be handled by the new office.

Packaging Corp. Offers Marketing Service

A nationally integrated packaging-marketing service with broad facilities to meet the special requirements and changing needs of the textile industry has been announced by the newly formed Packaging Corp. of America, Chicago, Ill. The new service utilizes a network of eight major mills and 41 strategically located converting plants extending from the Eastern Seaboard to the Rocky Mountains to produce containers, cartons, displays, molded pulp products, and paperboards. It also incorporates extensive timberlands and tree farms as sources of raw materials.

Packaging Corp. of America, formed on July 31, 1959, by the three-way merger of the American Box Board Co. of Grand Rapids, Mich., Central Fibre Products Co. of Quincy, Ill., and The Ohio Boxboard Co. of Rittman, Ohio, incorporates each of these companies as a major division.

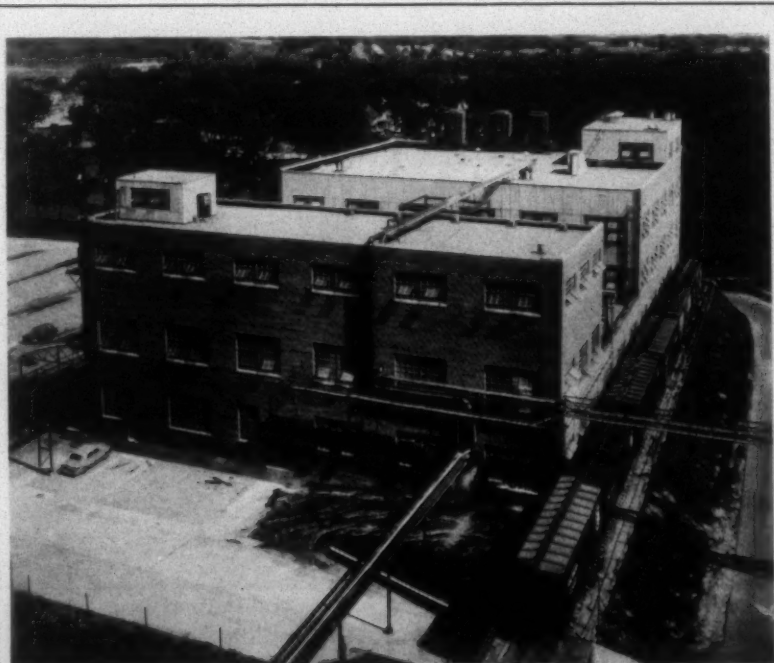
Allied Chemical Co. Expands Nylon-6 Facilities

Allied Chemical Corp., New York City, will triple its capacity for the production of nylon-6 yarn for automobile tires, according to Kerby H. Fisk, chairman and chief executive officer of the company. The yarn is called Golden Caprolan.

An addition will be constructed at the company's fiber plant at Hopewell, Va., which will bring the company's production capacity to about 50 million pounds a year.

U. S. Bobbin & Shuttle Goes Out Of Business

U. S. Bobbin & Shuttle Co., Greenville, S. C., has gone out of business. Jack Locke, president, said that the firm ended operations because of general conditions in the



PENICK & FORD EXPANSION—Penick & Ford Ltd. Inc. now has in operation this new starch and starch derivative producing plant at its corn refining facility in Cedar Rapids, Iowa. Designed specifically to produce the company's expanding line of specialty starches, this latest phase of Penick & Ford's over-all expansion program will enable the company to increase its total industrial and food starch output by 40%. Among the new plant's many features are a huge dry blender—said to be the world's largest—that delivers complete starch uniformity in carload lots; a battery of fully instrumented starch modifying tanks; and adjacent pilot plant operation that checks out every step of production; and many electronic and control devices which are said to make the plant unique in the industry.

textile industry and the fact that it couldn't compete with other mill suppliers. The company employed some 100 persons. The equipment is up for sale. U. S. Bobbin is controlled by Baker Industries Inc., Newark, N. J. It reported a net loss from operations of \$168,818 in the year ended December 31, 1958, and net loss of \$315,377 in 1957.

M. R. Snyder Co. To Represent Durant

Durant Mfg. Co. of Milwaukee, Wisc., has announced the appointment of the M. R. Snyder Co., 304 E. Tremont Ave., Charlotte, N. C., as the sales representative in North and South Carolina for the Durant line of instrument and industrial counters.

Celanese To Produce New High-Strength Arnel

The Celriver plant of The Celanese Corp., located at Rock Hill, S. C., will undertake an expansion program expected to cost several million dollars. The expansion will be principally for the production of a new type of fiber, designated Arnel 60, which cannot be made on existing equipment, the company said. It will be used for blends with other fibers such as cotton and wool. The expansion will be mostly internal, according to Frank J. Fitzgerald, plant manager. Fitzgerald said that it was not yet possible to estimate the extent of the new modernization either in terms of money or new jobs. The newly developed fiber is said to have higher strength than conventional Arnel and will be sold at a premium price.

Chemstrand Plant Has Long Accident-Free Record

Employees at the Chemstrand Corp.'s nylon plant in Pensacola, Fla., recently completed 17,106,186 consecutive man-hours without a disabling injury. The plant already is holder of eight awards of honor from the National Safety Council.

Akron Spool & Mfg. Purchases L. C. Smith

Akron Spool & Mfg. Co., High Point, N. C., has purchased all assets except the land and buildings of L. C. Smith Bobbin Works, Phillipsburg, N. J., according to John B. Hawley, Akron president. Engineering has already been completed on an addition to Akron's existing plant in High Point which will more than double the manufacturing space currently available. All facilities and all equipment of L. C. Smith are being moved to High Point to be rebuilt and modernized.

Hartford Fibres Asks F.T.C. To Approve Polynosic Name

Hartford Fibres Co., a division of Bigelow-Sanford Carpet Co., has filed an application to the Federal Trade Commission for a new generic name, Polynosic, for its new cellulosic fiber, which will be produced in the U. S. beginning in the

Summer of 1960. Hartford claims the new fiber justifies a generic name of its own due to its radically different properties from rayon and other man-made cellulosic fibers. It is further maintained that giving a generic name to this product will be carrying out the intent of Congress under the Textile Fiber Products Identification Act to protect the interests of the ultimate consumer by requiring that dissimilar textile products be identified by appropriate distinctive names. Polynosic is the Anglicized version of Polynosique.

Formica Establishes Industrial Sales Force

Formica Corp. has established a nationwide sales force specifically to handle its industrial product line. Vice-President R. T. MacAllister said, "Our industrial product sales group will offer specialized sales service on our broad line of industrial grades. This includes our various fabric and paper phenolic materials, widely used in the textile industry where mechanical toughness and smooth machinability is needed."

This is the third major step Formica has taken to strengthen its industrial business.

The Dixon Corp. Acquires Southern Spindle & Flyer

The Dixon Corp., Bristol, R. I., has purchased the facilities of Southern Spindle & Flyer Co., Charlotte. Vitto Pierannunzi, Dixon vice-president, will take over operations in Charlotte. Southern's payroll will be increased from 10 to 12.

The plant will provide more complete sales and servicing facilities for Dixon customers in the South. The Southern Spindle & Flyer Co. name will be retained and the firm will continue the moving, overhauling and trucking of textile machinery.

Celanese Corp. Buys Darvan From Goodrich

Darvan nytril fiber has been purchased by Celanese Corp. of America, New York City, from The B. F. Goodrich Co., Akron, Ohio. The acquisition, according to Harold Blancke, president of Celanese, will substantially expand markets for Celanese chemical products and further diversify its line of contemporary fibers.

Under the transaction Celanese acquires the patents, trademark, technical know-how and world rights to produce and market the fiber. B. F. Goodrich retains rights outside the textile fibers field, including plastics applications. At present, Darvan is being produced in staple form in a plant at the B. F. Goodrich Chemical Co.'s development center in Avon Lake, Ohio. B. F. Goodrich will operate the plant for Celanese until Celanese starts producing the fiber with its own facilities.

Acetic acid and vinyl acetate, representing the source of nearly three-fourths of Darvan's chemical composition, are both produced by Celanese Chemical Co. at its Pampa, Tex., plant.

The fiber is a product of research begun during World War II which had the original objective of discovering a new synthetic

fiber for tire cord. In the course of experimentation, Goodrich researchers succeeded in producing a chemical called vinylidene dinitrile. Fibers derived from this chemical were found to have a soft, luxurious feel—characteristics not suited to tire cord, but which presented interesting potential advantages for wearing apparel.

In 1952 facilities were established at Avon Lake for the production of the staple fiber. Development of the fiber was announced publicly in 1955. In the manufacture of Darvan, acetic acid is converted into vinylidene dinitrile which is then copolymerized with vinyl acetate. The resulting copolymer is spun into the fiber.

Darvan can be used 100% or in blends with wool or cotton or other man-made fibers. It is said to contribute a soft luxurious feel, good shape retention, serviceability in wear and good washability.

The Duplan Corp. Reports Greater Profits

A consolidated profit of \$1,054,964 has been reported by The Duplan Corp., Winston-Salem, N. C., for the fiscal year ended September 30, 1959. This is in contrast to a net loss of \$171,295 shown in the previous fiscal year. Consolidated sales for fiscal 1959 totalled \$25,742,864 against \$21,410,403 previously. The company reported an increase in consolidated sales of 31%.

Scandinavia Belting Becomes Scandura Inc.

Scandinavia Belting Co., Charlotte, has changed its name to Scandura Inc. The company said the change does not represent any change in personnel or location.

Rodney Hunt Becomes Agent For Bentley Rolls

The industrial roll division of the Rodney Hunt Machine Co. in Orange, Mass., has announced its appointment as exclusive U. S. agent for David Bentley Ltd. of Manchester, England. The Bentley firm produces all kinds of filled calender rolls used for friction calendaring, schreiner calendaring and embossing.

This arrangement makes available for the first time in the U. S. Bentley's unique wood fibre roll for water and starch mangling. It is expected that this particular roll will replace many solid wood and rubber covered rolls because of its superior properties in the high extraction of moisture.

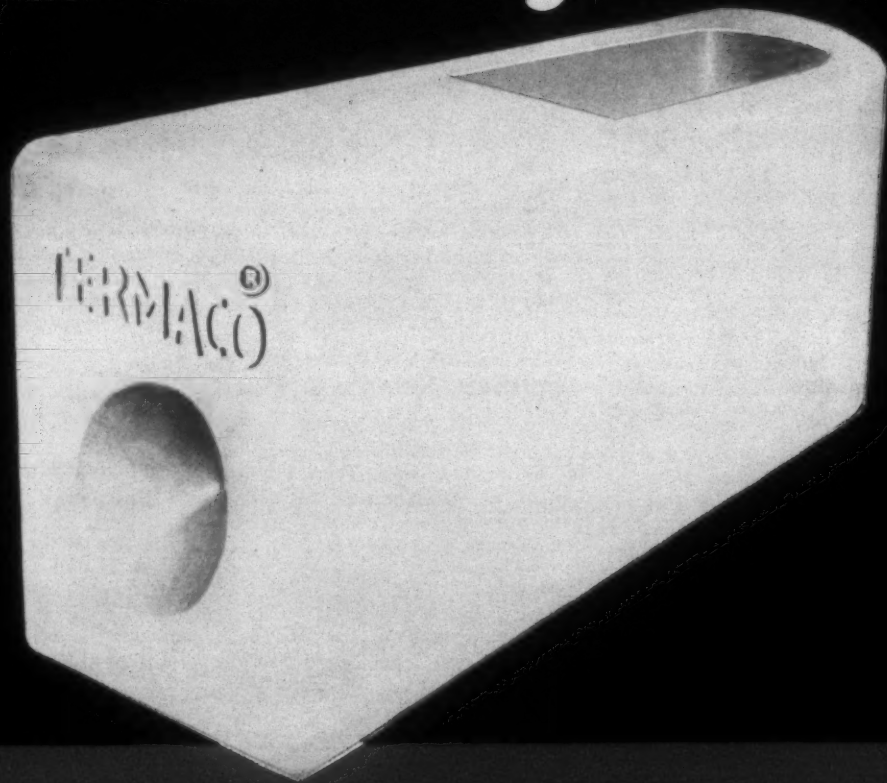
The wood fibre roll will be marketed in Canada by the Rodney Hunt Machine Co., through its Canadian agent, W. J. Westaway Co. Ltd., with offices in Montreal, Quebec, and Hamilton, Ontario.

Metasap Chemical Made Division Of Nopco Chemical

Metasap Chemical Co., subsidiary of Nopco Chemical Co., became a Nopco division on January 1.

Tom Campbell will remain manager of Metasap. The sales production and laboratory personnel will continue in their present capacities.

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Continuous Modernization Spells Success At Johnston Mfg. Co.

ONLY MODERN EQUIPMENT IS USED FROM OPENING TO SPINNING

THE Johnston Mills Co., headquartered in Charlotte, N. C., consists of four combed yarn mills, Johnston Mfg. Co., Park Yarn Mills, Worth Spinning Co., and Union Mills Co., and a carded yarn mill, Eastern Mfg. Co. Mercerizing, bleaching and dyeing is done at the company's modern Spinners Processing Co. located in Spindale, N. C. The group of mills provides regular employment for approximately 1,300 persons.

Some of the reasons for the success of the group of mills, in general, and the 20,208-spindle Johnston Mfg. Co., Charlotte, in particular, include: (1) a continuing machinery modernization program; (2) selective cotton buying; (3) thorough cotton testing and blending; (4) extensive process quality control; and (5) good, sound management. The yarn counts made by Johnston range from 8s to 32s. All counts have knitting twist and yarn is put-up on three-pound winder cones.

From opening through spinning there just isn't any "old" machinery in the mill. Every process has been modernized or new equipment has been installed. Knowing that cotton fineness and fiber strength greatly influence yarn characteristics, Johnston Mfg. Co. was one of the first mills to do something concrete to make these properties work for it.

Fiber testing includes taking pinches of cotton from approximately one-third of the bales in each 100-bale lot shipped to the mill. The samples are taken at random throughout the lot. These pinches of stock are blended twice on a blending machine. The blended fiber is allowed to condition in the controlled temperature and humidity of the laboratory for 24 hours before Micronaire and Pressley strength tests are performed.

Opening room bale lay-downs are arranged from the results of the blended fiber tests. The mill lays out 84 bales of cotton in its opening room. These bales may be taken from six or eight 100-bale lots so the desired properties of each lot may be correctly blended. The mill maintains its blends with an average Micronaire of 4.0 and an average Pressley strength of 86 to 88,000 pounds. Pressley

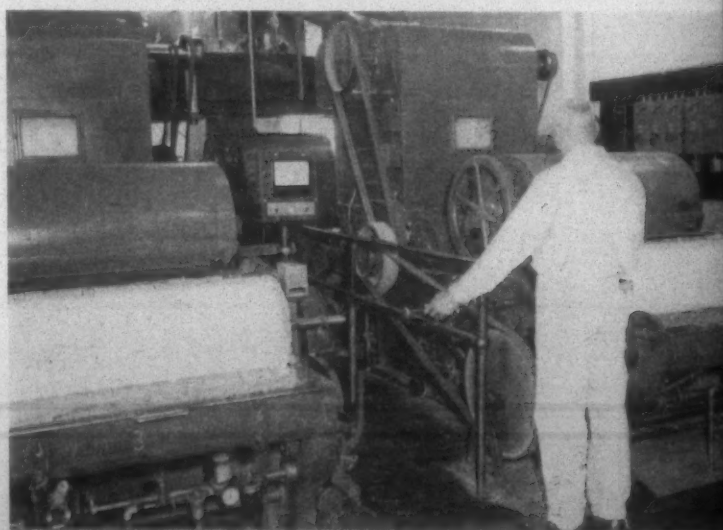
strength of individual 100-bale lots may average from 82 to 96,000 pounds. The mill does not accept cotton with less than 82,000 pounds Pressley strength.

Johnston Mfg. Co. uses $1\frac{1}{16}$ -inch strict middling cotton. All of the stock used is from Western states. Most of the fiber is grown in Arizona and California.

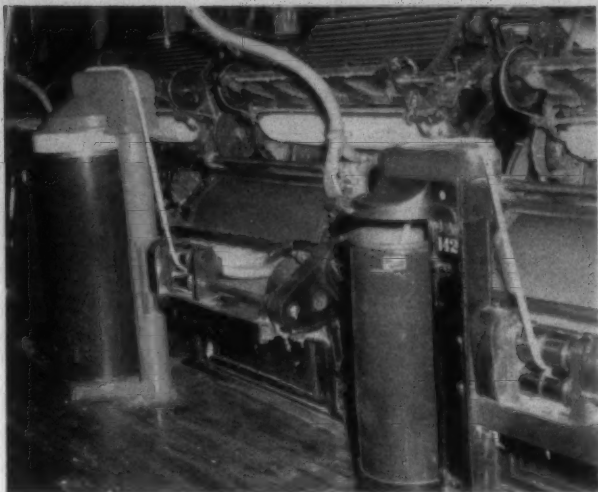
Opening Room Machinery

The mill has two opening lines with each containing five new hopper feeders. Half of the equipment was made by Saco-Lowell. The other half was made by Carolina Machinery Co., Charlotte. Half of the 84-bale lay-down is fed into each opening line. The separated stock joins again at the cleaning equipment.

Both opening lines feed identical cleaning lines con-



The amount of moisture in stock processed in one of Johnston's four pickers is measured with a Moisture Monitor. The opening line consists of two lines of five hoppers with each feeding two pickers. The mill uses an 84-bale lay-down.

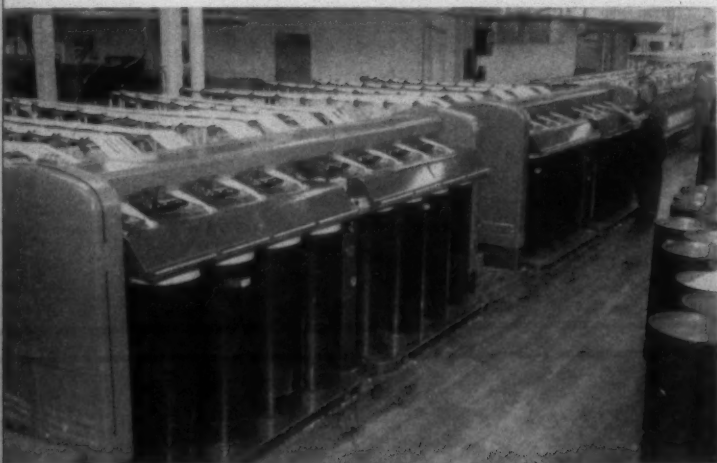


Johnston is completing a program of changing its cards from 12 to 18 inches in coiler diameter. The large and small cans shown here have a capacity of 30 and 8.5 pounds, respectively.

sisting of a vertical opener, a lattice opener, and a superior cleaner. Stock from each cleaning line feeds two pickers.

The company's four Kitson pickers make 52-pound laps which weigh 13.5 ounces per yard. A Strandberg Engineering Laboratories' Moisture Monitor is used to determine the amount of moisture present in the stock. Total picker lap weight is adjusted according to the results obtained by this instrument. Picker lap pins get a light film of oil from an oil-soaked felt mounted on the front of the picker. This oil application assures an even wind up of the lap when starting up. The picker and opening rooms do not have controlled humidification.

The 155 cards in the mill produce 50-grain sliver at 7.5 pounds per hour. All are equipped with Abington vacuum strippers and are ground on a ten-day cycle. They are stripped every two hours and 45 minutes. Fifty of the cards are equipped with 18x42-inch coiler heads made by McDonough Power Equipment Inc. The big cans hold some 30 pounds of stock. The remaining 55 cards have 12x36-inch coilers with cans holding 8.5 pounds. The cards with big coilers doff on a four-hour cycle while the small coiler cards are doffed every hour and 15 minutes. The mill is replacing all small coiler heads with 18-inch diameter heads.



Preparatory drawing at Johnston is Whitin Model M. The frames deliver 70-grain sliver at the rate of 418 feet per minute. Pre-determined yardages of sliver are put in the 16x42-inch cans.

Preparatory Drawing

Preparatory drawing for the mill consists of 16 deliveries of Whitin Model M frames. The frames, installed this year, produce a 70-grain sliver at the rate of 418 feet per minute. Each delivery is fed eight ends of 50-grain card sliver. The preparatory drawing frames are equipped with pre-determined yardage counters. The frames stop when 4,100 yards of sliver is coiled in the 16x42-inch cans. The cans have a capacity of approximately 36 pounds of sliver. The frames have Pneumafil suction cleaners on top and bottom rolls.



Johnston Mfg. Co.'s four sliver lappers with six deliveries each deliver a 920-grain-per-yard lap with a total weight of 32 pounds. The frames are Whitin changeover models.

Ribbon lappers at Johnston are Whitin Model C-1. The frames are changeovers from Model C and deliver a 920-grain-per-yard lap which weighs a total of 32 pounds. The six-head frames are fed a total of 60 ends of 70-grain sliver.

Combers

Johnston has 20 Whitin Model J combers with each delivering 46 pounds of combed stock per hour. Twin strands of 55-grain sliver are delivered to 15x36-inch cans. The cans have a capacity of some 25 pounds. The combers operate at 150 nips per minute. Noil amounts to 12% of the stock fed to the combers.

Two processes of drawing follow combing. The mill has 24 deliveries each of Whitin Model M breaker and finisher drawing. The breaker frames are fed three twin strands of 55-grain combed sliver and deliver 55-grain sliver. The frames have 16x42-inch cans and operate at 280 feet per minute. Pneumafil equipment is used to clean top and bottom rolls. Finisher drawing is fed six ends of 55-grain sliver and delivers 56-grain sliver at 280 feet per minute.

The 18 Whitin Interdraft roving frames, comprising 1,940 spindles, are all Model 1955. The frames make 1.00 and 1.80 hank roving. Package size is 10x5 inches with 32 ounces per bobbin. A 108-spindle frame delivers 6,047 pounds of 1.80 H.R. per 120-hour week. Frames operate at 80% efficiency. All frames have Pneumastop stop motions and Pneumafil vacuum ends-down collectors.

Spinning Changeovers

All spinning spindles at Johnston are equipped with Whitin Superdraft using Clean Align top rolls. Parks-Cramer overhead and frame cleaners are used on all frames. The spinning room has a central system Pneumafil vacuum ends-down collection system. Waste is accumulated in individual frame boxes but the vacuum is provided from a central station.

Spinning packages are $9\frac{1}{8}$ -inch and ten-inch paper tubes. Two ring sizes are used— $2\frac{1}{8}$ and $2\frac{1}{4}$ -inch. The average count made at the mill is 23s. The mill reports its spindle speed is about 10% over conventional speed because of the use of Kluttz Lubri-Cased rings.

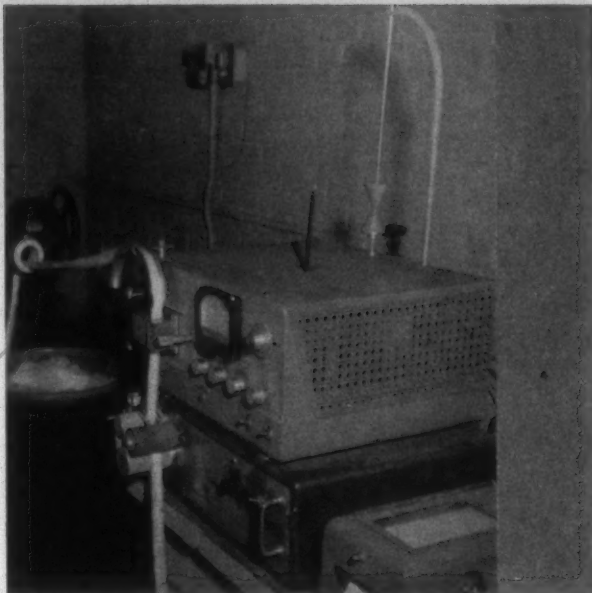
A total of 1,200 Foster winder spindles are used by the mill. Five of the frames were installed in 1955. The rest are older models. Qualitex electronic slub catchers are used on some 100 winder spindles. These slub catchers are reported excellent for checking the quality of the yarn and revealing the types of imperfections which should be removed. All yarn is wound at 425 yards per minute.

Quality Control

The central laboratory for all the company's mills is located at Johnston Mfg. Co. The laboratory gets ten bobbins of each count spun twice per week and tests the yarn for: (1) skein strength; (2) weight; (3) twist per inch; (4) single-end strength and elongation; (5) yarn appearance; and (6) non-uniformity. Skein strength and single-end strength tests are performed on Alfred Suter testing instruments. Twist per inch is determined using a brand new instrument from U. S. Testing Co. Non-uniformity is determined with the Brush Electronics yarn analyzer.

In addition to these tests, once per month the yarn appearance boards are photographed (with direct contact printing method). The mill has set up standards for yarn appearance. All test results are kept in permanent files. Test results and photographs on file currently date back ten years.

Yarn grading is done in a unique manner at the laboratory. The seriplane is located in a "show-up" room. Banks of lights are mounted at each side of the seriplane. Another bank of lights is mounted directly over the unit. When grading the yarn for evenness, the side lights are used and the top lights are off. When grading the yarn for



Johnston uses this Brush uniformity analyzer to test sliver, roving and yarn on a regular schedule. The instrument is also used for checking out new equipment and for troubleshooting duties.

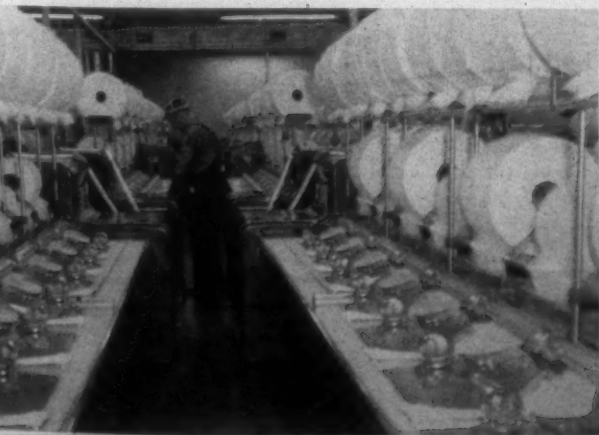
neppiness, the side lights are turned off and the top light is used. The mounting board is inclined downward when inspecting for neps.

The laboratory is also equipped with a multi-feed circular knitting machine which is used for knitting sample fabrics to determine the performance of the mill's yarns. Complaints from customers can be checked quickly with the machine. Moisture regain in the yarn is determined by the laboratory using an Emerson conditioning oven. Laboratory temperature and humidity is controlled to standard conditions.

Regular tests for uniformity of sliver roving and yarns are run on the Brush Analyzer. Sizings are also made in the laboratory to check on the mill sizings. In addition to regular tests, spot testing and troubleshooting is done with the Brush tester. New machinery installations are checked out to assure the mill the equipment is operating up to expectations.



The laboratory takes conditioned blended samples from each 100-bale lot of cotton and tests them on this Pressley fiber strength tester. The blended sample is also Micronaired. Opening room bale lay-downs are made in accordance with these test results.



These Whitin Model J combers each deliver 46 pounds of stock per hour. They operate at 150 n.p.m. and deliver twin strands of 55-grain sliver to 15x36-inch cans.

Preventative Maintenance Control

HOW TO SET UP A PREVENTATIVE MAINTENANCE PROGRAM TO HELP CONTROL MANUFACTURING OPERATIONS

By **WILLIAM SPROULE**

MACHINERY maintenance has been discussed quite extensively by supervision throughout the textile and allied industries. This served its purpose when supervision came up through the ranks and could rely upon vast experience. However, since the trend has moved from advancement within an organization to that of training programs, control systems became necessary to replace the old line supervision. This trend has created a great demand for the better young college graduate to cope with accelerated training programs for supervisory positions. Due to this lack of experience in key positions management is becoming more and more dependent upon departmental controls.

Out of these personnel trends, technical changes, and steps toward automation the preventative maintenance control program has taken its rightful place in the industry. Not that this or other control programs are new because they are not. They have been in existence for many years but only recently have these practices been converted into formalized programs. The function of maintenance has become increasingly important through cost reduction programs to meet with stimulated competition under present market conditions.

The machinery preventative maintenance program is one more of the many tools available to management to help control manufacturing conditions. The purposes of this program are:

- (1) to assign a definite inspection and scouring cycle for each machine to insure top mechanical condition.
- (2) To keep a current record of each machine by number showing the date inspected and scoured and listing the type and date of any major part replaced or repaired;
- (3) to supply records of each inspection and scouring in order to insure performance of work;
- (4) to prevent breakdowns by replacing parts on a prescribed frequency;
- (5) to reduce and minimize fluctuating supply costs;
- (6) to expedite and co-ordinate the functions of the department overseers, and the mechanical department related to machinery maintenance;
- (7) to readily pin-point a machine, or group of machines requiring excess major repairs or replacement of parts in order that necessary action may be taken to determine the cause; and
- (8) to assure management that all inspection, overhauling and scouring have been performed according to the master schedule.

Benefits Of Program

The benefits from such a program are: (1) management control by acceptance; (2) reduction in maintenance labor through scheduled work orders; (3) reduction in supply cost through pin-point controls and establishment of part

life; (4) improved quality of product produced through improved machinery performance; and (5) reduction in cost through increased machine efficiency.

There are many variations in application of preventative maintenance programs in existence and the one selected is one applicable to the woolen industry, both greige and finished.

Administration Of Program

Organizational structures may vary considerably between different woolen mills; however, for convenience the organizational structure as shown in Fig. 1 will be used.

The administration of the program is two-fold, namely, the maintenance work and the maintenance records and controls. The maintenance work includes what, when, and how work should be done, while the records and controls include issuing of work orders as scheduled, maintaining visual aids and records of work performed, and issuance of periodic reports.

The administration of the maintenance controls rests with the quality control department, while the supervision of actual maintenance work rests with the department supervisor and/or the master mechanic. This applies to all areas except the weave room which is quite different in nature since it involves operating procedures rather than purely mechanical conditions. For this reason weaving will be omitted at this time and will be discussed at a later time.

The department supervisor and master mechanic working with the quality control supervisor are responsible for establishing maintenance schedules for those machines in his designated area indicating what items are to be inspected, when and how often these items are to be inspected, and how each item is to be treated. Normally the frequency of inspection is determined from part life by setting each inspection on multiples of major part life.

The department supervisor is responsible for maintenance work performed by fixers and overhaulers under his jurisdiction, while the master mechanic is responsible for maintenance work performed by the shop maintenance men.

Since the quality control department is responsible for the administration of the program a check inspection has been included to assure management that the work is being done and that the quality of work is up to standard.

Once the maintenance schedules have been developed it becomes the responsibility of the quality control supervisor whose administrative functions are to:

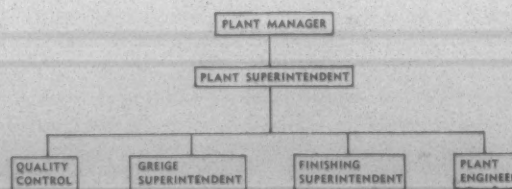


Fig. 1—Organizational structures can, of course, take many forms. For simplicity the one shown here is used in this article.

MAINTENANCE WORK ORDER			
MILL:		DEPT.:	
MACHINE PART	INSPECT FOR	ITEM CHECKED	WORK PERFORMED
Frame	Condition & Alignment	✓	
Slide Roll	Condition	✓	
Metal Roll	Condition & Smoothness	✓	
Springs Roll	Condition	✓	Repaired damaged roll
Pressure Roll	Condition	✓	
Soap Tank	Condition & Smoothness	✓	
Roll	Condition	✓	
Chain Drive	Mech. & Clean	✓	
Mixing Tank	Condition	✓	

Water Lines	Leaks & Open	✓	Repaired leak
Shafts	Condition	✓	
Remarks: 2 bearings on order			

MACHINE TYPE	Soaper	WORK DONE BY	WBS	DATE	
MACHINE NUMBER	2	INSPECTED BY	#CH	DATE	
ASSIGNED		TO			

Fig. 2—Part of the supervisor's responsibility is to issue maintenance work orders such as this.

- (1) develop master schedules;
- (2) issue maintenance work orders as shown in Fig. 2;
- (3) maintain visual maintenance records, which are written records showing inspection dates and major repairs and replacement parts;
- (4) issue quality reports to the plant manager and superintendents showing a comparison of work performed and work schedules;
- (5) make routine check inspections;
- (6) issue off-standard reports; and
- (7) act as liaison between plant engineering and manufacturing departments. The basic functions and flow of reports are illustrated clearly in Fig. 3.

Operation Of Program

The operation of the machinery maintenance program necessitates a good working agreement between all parties concerned because each is dependent upon the other.

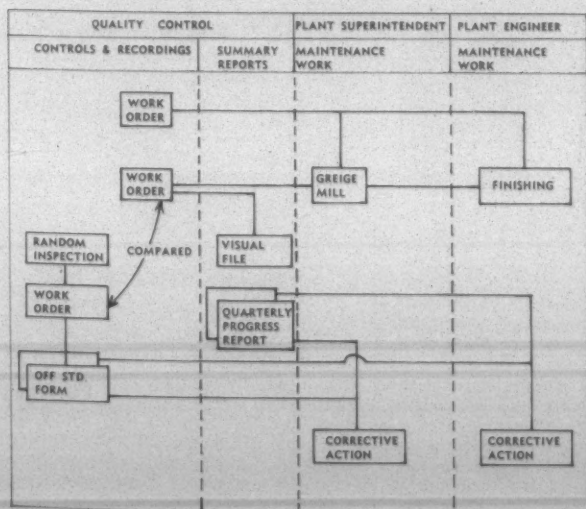


Fig. 3—The functions and flow of reports can be seen in this diagram.

SHOP MAINTENANCE MASTER SCHEDULE																
MILL:		MACHINE NOS. BY WEEKS														
MACHINE	FREQ. (WKS.)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Carbonizer Dryer	6		1						1							1
Grab & Bowl	6			1	2					1	2					1
Filling Mill	6			1	2					1	2					1
Soaper	15								1							
Dolly Washer								1	2			3	4			
Loop Dryer	6	1						1							1	

REMARKS: 3 Shift operation

Fig. 4—Thursday of each week the quality control supervisor checks this master schedule for the entire week.

The quality control department puts the mechanics of the program into motion. On Thursday of each week the quality control supervisor will check the master schedule shown in Fig. 4 for the coming week. He will locate the necessary maintenance work orders for those machines requiring maintenance. As an illustration let's assume that the coming week is No. 8 on the master schedule. Work orders for machine No. 1 (carbonizer dryer), machine No. 1 (soaper), and machine No. 2 (dolly washer) would be pulled out of the files. Since all of these machines will be inspected by the shop crew they shall be in the master mechanic's hands by not later than Friday morning in order that he may schedule his work and make the necessary arrangements for the coming week.

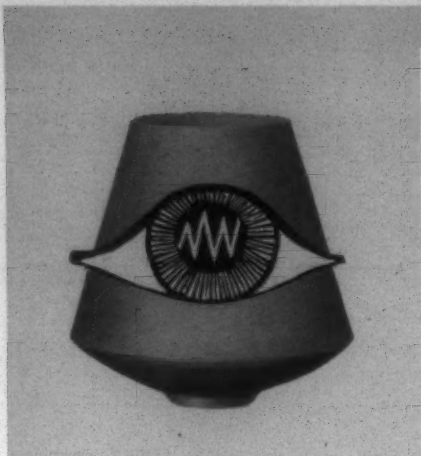
Necessary arrangements involves scheduling work with the department overseer for a day or days during the coming week to perform the required maintenance, and to make sure all parts that are scheduled for replacement are on hand.

Once the machines have been inspected and scoured, and/or overhauled as designated the maintenance man doing the actual work will properly fill out and initial the work order. The work order is then turned over to the department overseer for inspection and approval of work.

The overseer will examine all the machines which he received work orders on and if they meet with approval he will initial the work orders in the space provided. Should any faulty work be found it should be brought to the attention of the master mechanic for immediate corrective action. However, should there be any disagreement between the master mechanic and the overseer as to work performed or lack of work performed the overseer will report this to the quality control supervisor. All such complaints will be investigated by the quality control supervisor who will report his findings to the plant superintendent in order to eliminate or reduce future complaints.

Overseer's Duties

The overseer will examine all the maintenance work orders at the end of the week and make notes and order all those parts needed for the next inspection if supply is low. This will give assurance that parts and supplies will be on hand for the next machine cycle. Knowing what has to be done, especially part replacements requiring shop work, he can schedule production to meet these needs. He will then return all maintenance work orders with any remarks he



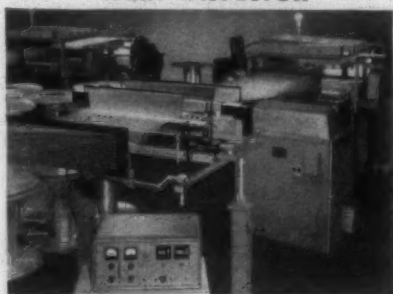
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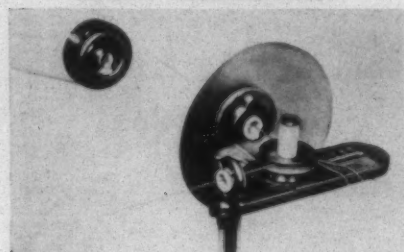
LINDLY AUTOMATIC YARN INSPECTOR



Lindly Automatic Yarn Inspector for filament yarns.

Used primarily by producers and processors of synthetic yarns, it is a high speed, ultra sensitive photoelectric instrument for detecting yarn defects such as broken filaments, strip-backs and fluff balls in warping. It can be made to operate a counter, a signalling device, or to actuate a machine stop switch — singly or in combination for any degree of imperfection. For example it can be made to count minor defects and to stop the warper only for repairing major defects.

LINDLY ELECTROTENSE



Lindly Electrotense.

This unique yarn tensioning device for warp creels, winders, twisters, knitting machines, looms and similar operations provides completely uniform tension for any number of ends and the tension for all ends can be varied at will by turning only *one* dial. It consists of two conventional type discs, with a small electromagnetic coil beneath. The lower disc is made of nonmagnetic brass, while the upper disc is of magnetic iron. Thus when the coil is energized through a central electronic control, the upper disc is attracted downward, pressing the yarn

between it and the lower disc in any degree desired. The pressure is pulsating which fact prevents backup of twist and helps to keep the tension discs clean and free turning.

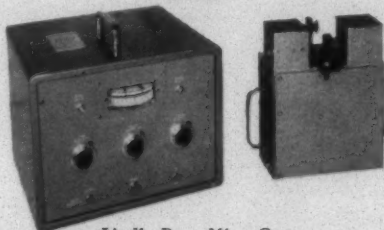
LINDLY PHOTO-SCANNER

This is a very sensitive photoelectric inspection device for use on tricot knitting machines to scan the cloth continuously for defects during the knitting operation and automatically stop the knitting machine when defects occur. The scanner is mounted above the center of the knitting machine. Oscillating back and forth, it scans the cloth along a path about 1 inch wide and 1 inch from the needle bar and up to about 3 inches from each selva. Defects are kept to approximately 3 inches in length; patrolling labor is greatly reduced.



Lindly Photo-Scanner for warpknit fabrics

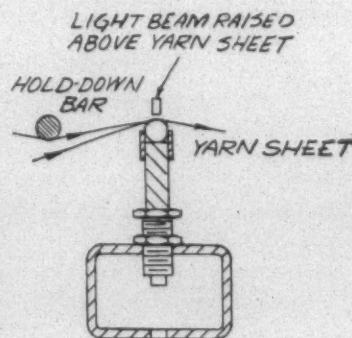
LINDLY DYNA-MICRO-GAGE



Lindly Dyna-Micro-Gage.

Among the many uses for this instrument is the continuous monitoring of spun and filament yarns to an accuracy of a few millionths of an inch. It is photoelectric in principle, utilizing a change in amount of light falling on a phototube for its operation. It can be set for almost any desired sensitivity range, from quite coarse to very fine. Will check the average denier of filament yarns, the uniformity of spun yarns on a quantitative basis, the

size of holes in spinnerets; measure and record yarn tension; check and monitor the strength of chemical solutions. In most cases can also be provided with a feed-back system to continuously control the process itself.



Cross section drawing of Lindly Automatic Spun Yarn and Tire Cord Inspector.

LINDLY SPUN YARN AND TIRE CORD INSPECTOR

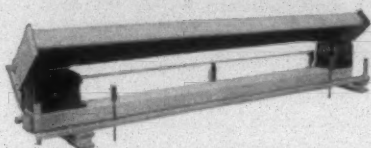
This differs from the regular Lindly Automatic Yarn Inspector in that the defects for which the unit is actuated can be selected on the combined basis of length and height. Long, low defects will be caught as readily as short, high ones; yet knots can be made to pass through undetected. Application has been successful on tire cord and wool and worsted yarns, where it has been discovered that it is cheaper to remove defects during the warping operation than subsequently in mending, particularly when these defects tend to cause yarn breakage and machine down time later on.

LINDLY THREAD AND LINE INSPECTOR

This is also a modified version of the regular Lindly Automatic Yarn Inspector. It is used to inspect, on a single or double end basis, thread, yarn, string, fishing line, medical sutures, etc. Most fishing line manufacturers in this country are using it. Another application is for qualitative sampling by large purchasers of yarns.

ELECTRONICS TO TEXTILES

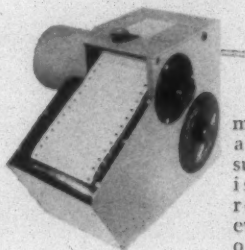
LINDLY AUTOMATIC END BREAK DETECTOR



Lindly Automatic End Break Detector.

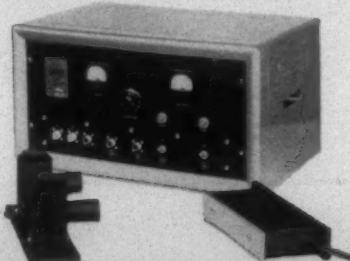
This unit, photoelectric in principle, uses two light beams traversing the width of the yarn sheet, one above and one below. It detects a broken end when a wave or ripple in the end is caused by the sudden release of tension. Usually the broken end remains back in the creel where it is easily spliced up. A combination of the Lindly Automatic Yarn Inspector and this End Break Detector makes a very effective team for controlling yarn quality in a warping operation.

LIND-RECORDER



Lind-Recorder.

This instrument has many applications, such as when it is desired to record or time events of an on-off or yes-no nature, such as machine down time, units produced per machine, including yards, knots, r.p.m., picks per minute, etc. Furthermore, the Recorder can be placed at any reasonable distance from the happening (for instance in the supervisor's office) so that all information is continuously fed into a central location. No filling of ink reservoirs and no wet paper storage.



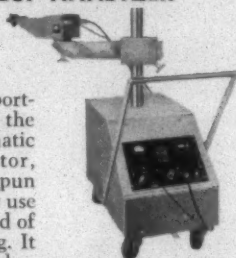
Lindly Photoelectric Seam Detector.

LIND PHOTOELECTRIC SEAM DETECTOR

This device is successfully used as a non-contact method of indicating the presence of seams in fabrics during shearing, calendering, printing, coating, tubing

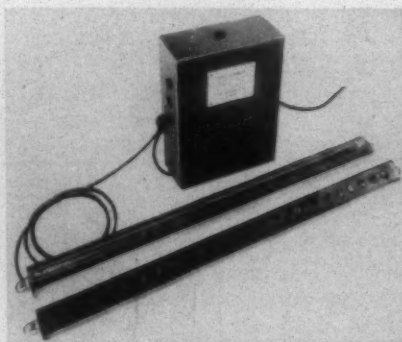
and all other operations preceded by batching. It can be made to actuate a stop motion or counter, to lift a pressure roll or to perform any other action required because of the presence of a seam. It does this within a few thousandths of a second, making detection practically instantaneous.

LINDLY AUTOMATIC YARN DEFECT ANALYZER



Lindly Automatic Yarn Defect Analyzer.

This is a portable model of the Lindly Automatic Yarn Inspector, filament or spun yarn type, for use on a single end of yarn or roving. It consists of an electronic control unit mounted in a cabinet on a dolly and a specially designed detecting head. This head is adjustably mounted on a vertical column and can be moved up and down and back and forth. The unit can be wheeled up to a machine and the head set to inspect a single end of yarn while in process. Thus it is valuable for spot checking or sampling a given batch of yarn, or the output of a certain machine or spindle for laboratory or quality control purposes. One mill is using it to sample yarn batches, twenty ends at a time.



Lance Static Eliminator.

LANCE STATIC ELIMINATOR

This instrument, made in a variety of models, has an application wherever there is a problem in textile operations due to static electricity. It causes a high voltage discharge from pointed electrodes into the air, causing the fibres to be surrounded by ionized air, which serves to discharge the static electricity accumulated all around the surface of the fibre. Whereas the voltage is high enough to effectively ionize the air, it cannot harm the operator who accidentally comes in contact with the electrodes.

Future Developments

Other Lindly Products which we hope to announce in the not too distant future include a Fabric Inspector and a Tension Control and Stop Motion for circular knitting machines.



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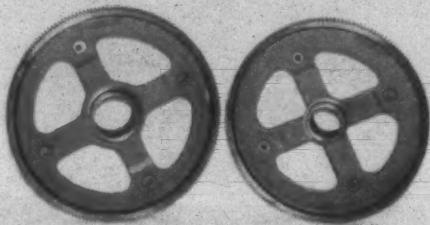
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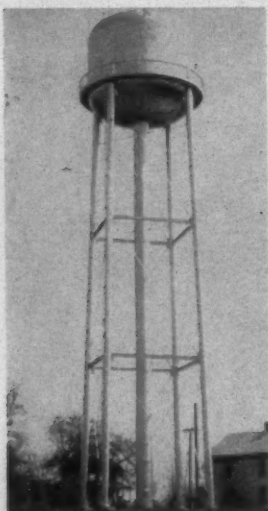
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3 Type Drive	6		9	
SUPPLY DATA				
MAJOR REPLACEMENTS		MAJOR REPAIRS		
PART	DATE	PART	DATE	

Fig. 5—All pertinent information is transferred by the quality control supervisor to the visual file card titled "Maintenance Record Card."

feels necessary to the quality control supervisor.

The quality control supervisor will transfer all pertinent information to the visual file card titled maintenance record card shown in Fig. 5. At this time new maintenance work orders will be made out and filed under the date for the next cycle. All pertinent data will also be transferred to these work orders in order that this information will be brought to attention at the next inspection.

As mentioned earlier all work orders must be returned within one week after the schedule date. Should any of these work orders not be returned to the quality control department within the prescribed time an off-standard condition exists and the quality control supervisor will issue an off-standard form, Fig. 6, to the department overseer. The overseer is given two weeks to return the off-standard form stating reason for off-standard condition and corrective action. Should the off-standard form as shown not be returned within this time limit another off-standard form is sent to the overseer with a copy to the plant superintendent and plant manager.

As a double check on work performed the quality control supervisor will random check the machines inspected. Should low quality work be found an off-standard condition exists which will be handled similar to the procedure outlined above.

Once every three months a progress report will be issued showing: (1) the standing of maintenance work performed against scheduled work; (2) those machines or groups of machines requiring excessive repairs or replacement of parts; and (3) those parts requiring excessive replacement when tied in with supply controls.

OFF-STANDARD FORM		
MILL:		
DEPT.: <i>Finishing</i>	SUPERVISOR:	DATE:
MACHINE		
REASON FOR OFF-STANDARD CONDITION: <i>Work order not returned</i>		
BY QUALITY CONTROL SUPERVISOR		
EXPLANATION FOR OFF-STANDARD CONDITION:		
BY OVERSEER		

Fig. 6—When work orders are not returned within one week after schedule week an off-standard form is issued to the department overseer. The overseer must return the off-standard form within two weeks stating the reason for the off-standard condition and what corrective action has been taken.

Maxbo Loom Has First U. S. Showing

THIS SWEDISH-BUILT LOOM, FIRST ANNOUNCED LAST YEAR, WAS RECENTLY DEMONSTRATED IN GREENWOOD, S. C.

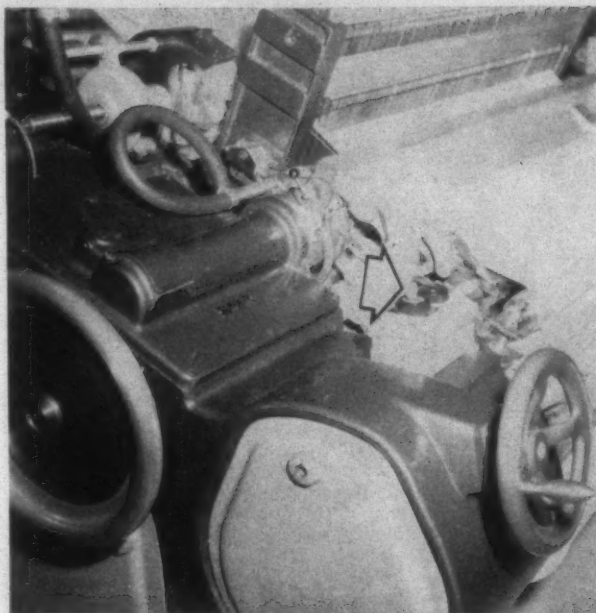
A display model of the Swedish-built Maxbo shuttleless loom (T.B., July 1959, p. 31) received its first public showing in the U. S. December 18 at the Southeastern Loom & Machine Works Division of Abney Mills, Greenwood, S. C. The new loom is to be built by Southeastern and sold by Edda International Corp. of Greenville, S. C. and New York City.

The display model was running a 40-inch heavy twill fabric with 16s warp and 8s filling at a speed of 325 picks per minute. Edda says the loom is capable of speeds of 325 to 400 p.p.m. A wide range of fabrics made on the loom, from gauze to heavy duck and jute bagging, was also shown.

Because of the elimination of the shuttle stroke, the Maxbo loom runs practically vibration-free. This was amply demonstrated at Greenwood by standing a nickle on edge on the stop-start push button with the loom running at 325 p.p.m. Of course, the nickel would not remain on edge indefinitely but the mere fact that it could be balanced at all shows the almost total elimination of vibration achieved by the loom builders. At Greenwood the Maxbo was mounted on pads on a concrete floor.

As explained in the earlier article cited above, filling for the Maxbo loom is fed from winder cones mounted on a bracket attached at the loomside. The filling is propelled through the shed by air compressed through a nozzle. A suction device on the other end of the loom holds each pick in place until beat up and removes the clipped end from each pick. The battery, shuttle, raceboard, picker sticks and other parts connected with the use of a shuttle have been eliminated.

Filling breaks on the Maxbo loom are said to be exceptionally low since the yarn is drawn from the winder



The almost total elimination of vibration achieved by the Maxbo loom is demonstrated by standing a nickle (arrow) on edge while running a heavy twill fabric (16s warp and 8s filling) at 325 p.p.m.

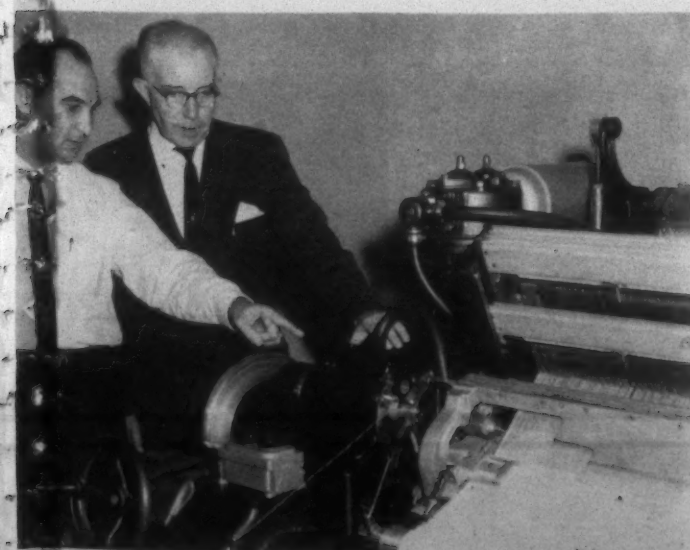
cones at a constant speed by a measuring roller. The correct length of yarn is measured and cut before insertion into the shed.

Warp breaks are also reported to be much lower than on conventional looms in spite of the greatly increased operating speeds. This is possible because of the smaller size shed run on the Maxbo and the fact that there is no shuttle racing back and forth chafing the yarns.

Among the many features of the Maxbo are:

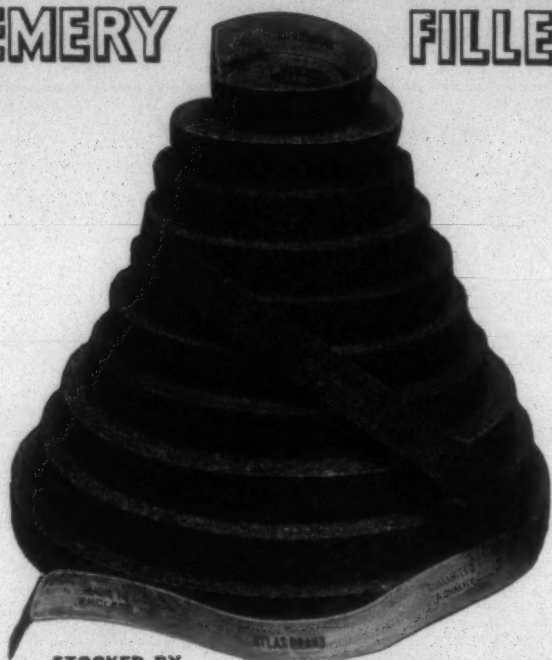
- (1) harness motion with up and down movement on positive cam action;
- (2) take-up and let-off motion tied together with shafts and levers—no lost motion and when the cloth is let-back the warp automatically takes up the slack;
- (3) no brakes are required because the action of the air compressor stops the loom almost instantaneously when the power is cut off;
- (4) automatic lubrication system—many working parts are actually enclosed in the loomside and run in a spray of oil;
- (5) pushbutton starting, stopping and backing-up;
- (6) electrically operating stop motions on both filling and warp; and
- (7) only about half as many parts as a conventional loom.

Southeastern is currently building ten of the display models. Some will be used by Edda as demonstrators while others will go into Abney plants for extensive testing under normal operating conditions. Production models to be built later will be modified versions of the prototype with harness line and whip roll about six inches lower. The



Raleigh J. Farr, pointing to pick measuring wheel, is organizing the loom sales division for Edda International Corp. Bjarni Gudjonsson is president of the company. The Swedish-designed loom is being built in the U. S. by Southeastern Loom & Machine Works.

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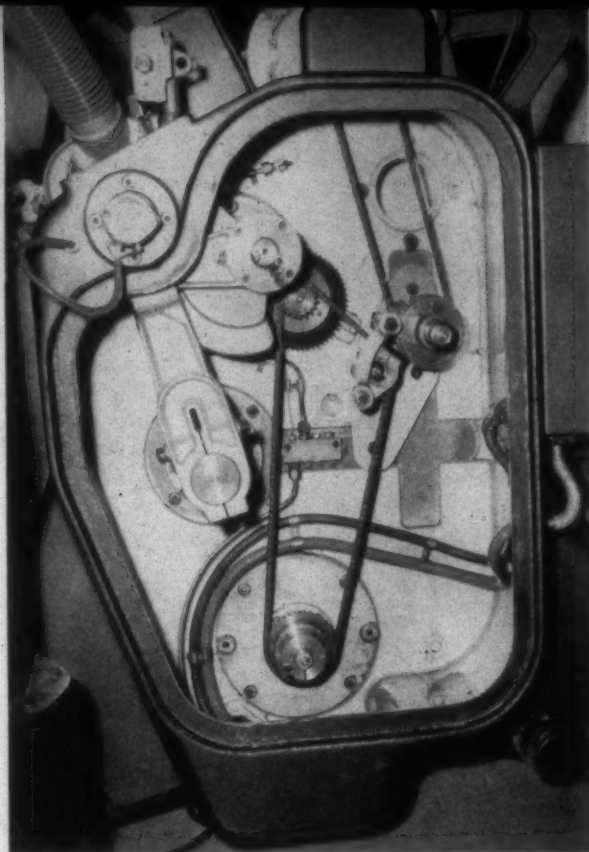
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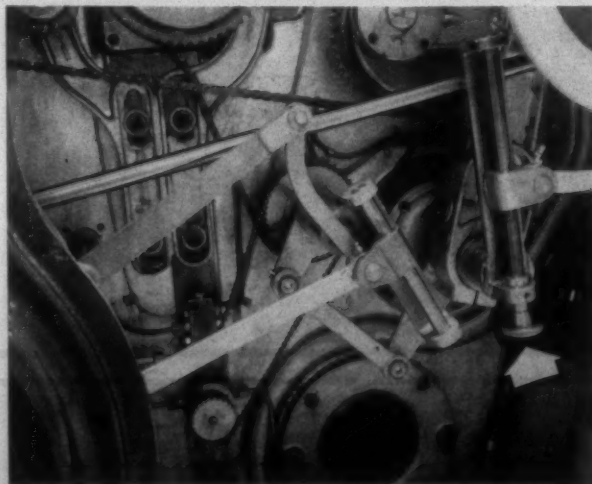
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The Maxbo's clean, uncluttered design is seen from this view of the inside of one of the loomsides. When sealed and running this mechanism is constantly sprayed with a mist of lubricant.

reed line and fell of the cloth will remain in present positions. Production models will also be fitted for central station waste collection. The display model was equipped with an air compressor and two h.p. motor. Production models may be supplied compressed air from a central compressor reducing the gross weight of the loom and probably reducing the power required to operate it.

Maxbo looms will be available in reed widths of 40 and 44-inches. Wider looms are reported to be in the design stages. While requiring less floor space than conventional looms, the Maxbo accommodates warp beams up to 32 inches in diameter. The cloth roll will hold between 400 and 500 yards of standard print cloth constructions.



The number of picks per inch inserted in the fabric by the Maxbo loom is adjustable by means of a knob (arrow) and threaded shaft arrangement shown here. Pick gear changing as known on conventional looms has been eliminated.

The Designing Of Pile Fabrics

MANY FACTORS MUST BE CONSIDERED IN THE PRODUCTION OF CUT FILE FABRICS SUCH AS VELVET AND VELOUR

By E. B. BERRY*

Chapter 3

THE Callaway Textile Dictionary defines velvet and velour as follows:

Velvet: "A warp pile fabric distinguished by a succession of rows of short cut pile standing so close together as to present a uniform surface rich in appearance and soft to the touch. Originally made only of silk, but now also of cotton, rayon and various combinations. Made in a wide variety of types and constructions; e.g., chiffon velvet, Lyons velvet, transparent velvet, etc. Velvets are woven by two entirely distinct methods. One is to use cutting wires over which the pile ends are lifted and by means of which they are severed as the wire is withdrawn. The other is a form of double cloth weaving in which two cloths are woven face to face with the pile ends interchanging from one to the other; the pile ends are cut while still on the loom by a reciprocating knife blade, thus giving two separate pieces of velvet."

Velour: (1) "Term loosely applied to cut pile fabrics in general; also to fabrics with a fine raised finish. (2) A cut pile cotton fabric similar to cotton velvet but with a heavier, denser pile."

Fig. 19 illustrates the weave, drawing-in draft and cross-section of these fabrics. The excellent pile coverage is obtained by a pile tuft every pick. This is made possible by having two pile ends per dent. The legs of these tufts are opened out in finishing which cover up the ground fabric and present a uniform pile surface, even with a relatively low pile height.

It can be seen that this is a "V" tuft. When pressure is applied to the cut pile surface, the tufts may be pushed out the back. When a spun yarn, such as cotton is used for pile, a slight disturbance will be accepted if the rubbing pressure on the pile surface is not too great. However, if a slippery fiber (such as mohair) is used in this weave, normal wearing pressures will surely push the pile out, and some adhesive material, such as latex or resin, must be put on the back.

When cotton is used for the pile yarn, and the fabric is used for the covering on the seat of a chair, swirls may develop in the cut pile surface which are most difficult to remove.

From the drawing-in draft it can be seen that the pile harness are in the front position. This is done because the pile harness must move the greatest distance, in going from top piece to bottom piece, and easier movement is obtained by the front harness. The bottom backing harness are next, because these ends are hardest to reach by the weaver when repairing ends-down. The top backing harness are last, as these ends are easier to reach.

The reeding is most important. It can be seen that a reed wire separates two adjacent pile ends. In order to have sufficient pile coverage, it is necessary to have a pile tuft every pick. This requires two pile ends, since the same pile end cannot make a tuft in the top piece and bottom piece at the same time.

In the cross-sectional view there is a gap between the two rows of pile tufts in the center of the sketch. This is the way the fabric looks in the reed, the space being occupied by the reed wire. In the cloth there is one row or vertical plane of pile tufts, not two as shown here. As the yarns come out of the reed, to make cloth, they expand to fill up the area taken up by the reed wire. The right-hand row of pile tufts is pushed to the left by the ground end on the right. The left-hand row of pile tufts is pushed to the right by the ground end on the left.

The only way this pushing can be done is to have the ground end, which weaves next to the pile end, weave opposite to the pile end. If the ground end and pile end wove the same, the ground end would roll under the pile tuft.

If both pile ends were next to each other in a dent, when the expansion took place half the tufts would be pushed

2 PICK V TUFT

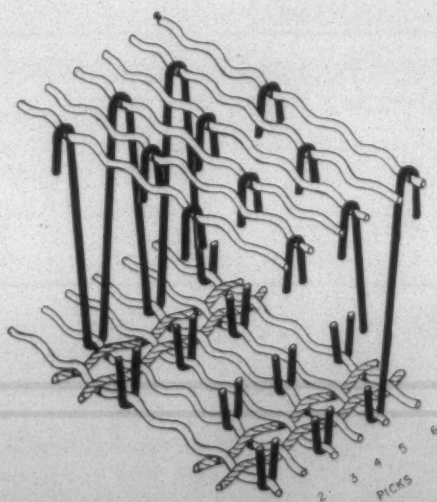
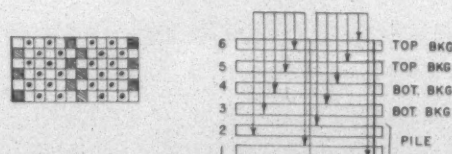


Fig. 19—The weave, drawing-in draft and cross-section for velvet and velour weaves. Excellent pile coverage is obtained by a pile tuft every pick. This is made possible by having two pile ends per pick.

*Mr. Berry is an assistant professor in the department of fabric development at North Carolina State College School of Textiles.

over, while the other half, which wove the same as the ground, would remain stationary. These tufts would roll and remain above the ground end, giving an uneven appearance and pile height to the fabric.

Delivery Calculations

Delivery is important because it means pile height, cost and weight. An illustration is given showing this calculation from the finished cloth to the greige or "off loom" cloth. Fig. 20 shows the cross-section of a cotton velour weave. From an actual analysis of a fabric a tuft measured .20" in the finished cloth, with 40 picks per inch. The fabric has already been sheared and shrinkage has occurred. In order to get the delivery of the pile yarn in the finished cloth to use in the reconstructed weight, multiply the length of each tuft by the picks per inch.

$.20" \times 40 = 8.00$ inches of yarn per inch of cloth or yards of yarn per yard of cloth, which is delivery.

To determine the delivery in the greige cloth at the loom, for cost purposes, the amount of shearing in the greige and finishing must be known, as well as the amount of shrinkage in the fabric. A shearing of .005-inch in both greige and finishing, and a one-pick shrinkage is assumed. It is necessary to add .005-inch to each leg of the pile tuft for greige shearing, and .005-inch is added to each leg of the pile tuft for finish shearing. This means that the pile tufts must have come off the loom at .220-inch ($.20" + .01" + .01"$). Also the picks per inch off the loom were 39. The greige delivery then will be

$.220" \times 39 = 8.58$ inches of yarn per inch of cloth or yards of yarn per yard of cloth which is delivery.

This is greater than the finished delivery, but must be used to allow for the necessary shearing.

Commercial Standards

The U. S. Department of Commerce, through the National Bureau of Standards, has set up commercial standards for many items purchased in every day living. The scope of such standards consist of specifications, nomenclature, definitions, grading rules, dimensional requirements and tests as a means of determining and checking quality of goods.

CS-103-42 Is For Cotton and Rayon Velour (Jacquard And Plain)

The purpose of this commercial standard is to establish on a national basis minimum specifications and methods of test for cotton and rayon velour (jacquard and plain) for the guidance of producers, distributors and users; to serve

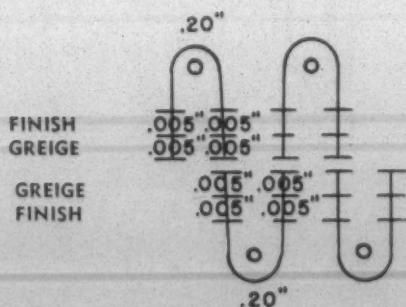


Fig. 20—Cross-section of a cotton velour weave.

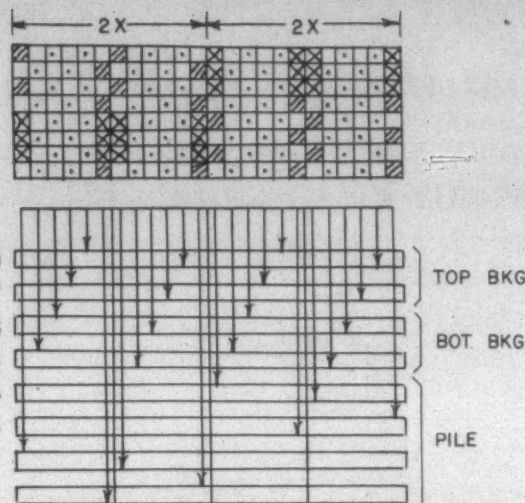


Fig. 21—In order to dress up a cotton velour, the weave may be changed slightly to produce a design in the fabric. One such variation is shown here. It can be woven on eight harness with eight picks to a repeat.

as an assurance and protection to purchasers; to promote fair competition among manufacturers; and to serve as a basis for certification of quality.

Some requirements are as follows: *Weight*—not less than 1.50 pounds per linear yard, 54 inches wide. *Weight of Pile*—Not less than 0.70 pounds per linear yard, 54 inches wide. *Tufts*—Not less than 225 pile tufts to a square inch. *Pile Ends*—Not less than 756 per 54-inch width (14 per inch). The cotton pile yarn shall not be less than two-ply. *Pile Coverage (Jacquards)*—The pile tufts shall cover at least 80% of the face of the fabric. *Warp Yarn*—All warp yarn shall be not less than two-ply. *Number of Picks*—The number of picks per inch shall not be less than 24.

Variations Of Velour

(a) In order to "dress up" a cotton velour, the weave may be changed slightly to produce a fabric with a little design in it. Figs. 21 and 21A show such a variation from the basic velour weave. It can be woven on eight harness with eight picks to a repeat which is still in the range of a cam loom. This fabric has blocks of cut pile and blocks of depression in a checkerboard motive.

With such a different weave, the delivery calculations will have to be modified. The "V" tuft is still .2" for each of three picks, but the tuft making the depression is .43" and covers five picks. This means $.43" + .2" +$

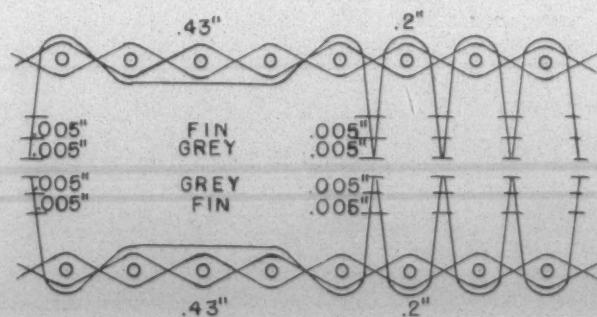


Fig. 21A—Still another variation from the basic velour weave is shown here. Delivery calculations have to be modified with each different weave.

.2" + .2" or 1.03" for every eight picks. Following the same calculations for the regular cotton velour:

$$\left\{ \frac{1.03''}{8} \right\} \times 40 = 5.15 \text{ inches of yarn per inch of cloth or yards of yarn per yard of cloth which is delivery.}$$

Shearing is the same as before, with .005" taken off each leg of the tuft in both the greige and finishing. The "V" pile tufts must have come off the loom at .22" for each of three picks and the tufts making the depression come off the loom at .45" for five picks. This means .45" + .22" + .22" or 1.11" for every eight picks. The picks per inch off the loom were 39. The greige delivery then will be

$$\left\{ \frac{1.11''}{8} \right\} \times 39 = 5.42 \text{ inches of yarn per inch of cloth or yards of yarn per yard of cloth which is delivery.}$$

(b) *Antique Velour* is made with the same weave as shown in Fig. 19. The change here is in the use of a "Flake" filling. Yarn is made in the conventional way, but every 15, 18 or 24 inches a thick place with very little twist is inserted. When this is woven into the fabric, the thick place or "flake" will show through the pile.

Finishing

Velour is the plain weave of pile. It is relatively easy to weave. The finishing, however, is very difficult, requiring both good equipment and an experienced operator. Listed below is a typical Cotton Velour Flow Chart.

(1) *Weave*—According to fabric specification. This will include texture, counts of all yarns, pile height, change gears, etc.

(2) *Measure*—As soon as possible after the fabric is woven to get an accurate reading of the loom yardage, before too much shrinkage takes place. Yardage is expressed to the nearest 1/8 yard.

(3) *Greige Inspect*—Weaving defects are noted, pile height recorded, strings attached in the selvage opposite bad defects, the mendable places are circled with chalk and a "greige grade" is given to the entire piece.

(4) *Mend and Burl*—Girls will mend small defects or damages which, if left unmended, would reduce the quality and therefore the grade of the piece. With high priced fabrics (\$4.00 per yard and up), it will pay to spend a few cents per yard for mending to bring up the grade of the cloth.

(5) *Greige Storage*—The cloth is stored in plaited form, on skids, one piece on top of another. All pieces of the same style are stacked together, so that dye lots can be made up easy. Each piece is 40 to 65 yards long.

(6) *Greige Shear*—The pile is sheared to remove unevenness and choppy cutting from the loom. Generally about .005-inch is taken off in three cuts.

(7) *Pre-Finish*—Wet out and extract; tiger; dry; tiger; beater; shear; brush.

(8) *Dyeing*—Use almost any cotton dyestuffs, and apply the color by different methods.

Open Width	Kettle	Rope Form	Mangle or Pad
Dye 4 pieces/set		Dye 6 to 12 pieces/set	Dye
Wet Out & Extract	Scutch		Steam
Tiger	Wet Out & Extract		Aftertreat & Extract
Dry	Tiger		Tiger
Tiger	Dry		Dry
Beater	Tiger		Tiger
Shear	Beater		Beater
Brush	Shear		Shear
	Brush		Brush

(9) *Condition or Humidify*—The proper amount of moisture must be in the fabric before it is matched for color. The cloth may be passed through a humidifying chamber or allowed to stand on the floor overnight to gain back some of the moisture that was lost in the drying operation.

(10) *Finish Inspect*—Graded for quality as to damages, width, finish, pile height, length of piece, and a "finish grade" is given to the entire piece. If not approved for "finish," it must be "refinished."

(11) *Color Match*—The shade of the piece is checked against a standard, and it must be a "commercial match." Otherwise it will be sent back for redyeing. The matching is done under a North light or artificial daylight. If a piece is redyed, it must also be refinished.

(12) *Roll and Wrap*—The cloth is rolled on a paper tube, full width, with about 40 to 65 yards per roll, usually in one continuous length. The wrapping is in kraft paper with burlap covering but other wrapping may be used, depending upon the customers' wishes.

(13) *Ship*—Rolls of finished cloth are put in bins, and held till enough rolls are ready for shipping to the customer.

End Uses

Cotton velour is used for (a) furniture upholstery; (b) drapery material; (c) women's coats and men's caps; (d) powder puffs; (e) casket lining; (f) jewelry display cases and jewelry box lining; (g) blackout curtains; (h) buffing cloth; (i) paint roller coverings; etc.

This type of fabric may be used for windbreakers which might require coating and printing. The extra finishing sequence is as follows:

(1) *Coat*—Rubber in the form of liquid latex or a resin is applied to the back of the cloth. This anchors the pile, prevents it from being pushed out from the face, and gives extra protection from the wind when this fabric is made into a coat.

(2) *Dry*—In a tenter dryer, to hold the cloth out to width. Also to vulcanize the rubber and dry the cloth.

(3) *Shear*—In the coating operation, the pile is disturbed. The shear evens the pile surface and makes it more uniform for printing.

(4) *Print*—A two, three or four-roller machine is used depending on the number of colors desired and the pattern selected. Printing is on one side only.

(5) *Steam*—This sets the color in the fabric after it is applied by the roller printing machine.

(6) *Finish*—Wet out; extract; shear. The wet-out operation will help remove some of the excess dyestuff that may remain on the surface of the fibers. Shearing will even up the surface, and make it look clean and smooth.

(7) *Condition or Humidify*

(8) *Finish Inspect*

(9) *Color Match*

(10) *Roll and Wrap*

(11) *Ship*

Printed cotton velour is used for (a) women's coats and men's caps; (b) automobile upholstery in sport cars; (c) drapery materials; (d) furniture upholstery.

Analysis Of A Cotton Velour

The following is an analysis of a cotton pile fabric, and is used to show one method of dealing with the extra

system of warp known as "pile." There are other methods. The balance used was calibrated for grams. The conversion factor in the calculations is 453.59 grams in one pound. In the multiplication and division, the result is carried to more decimal places than is normally required.

When given a fabric to be analyzed, look at it carefully before starting to cut and weigh. Much can be learned from this first inspection to assist in how to cut and where to cut; which is warp and which is filling. Pull one thread out. If the pile "tufts" are wrapped around it, the yarn is a pick of filling. If it is clean, with no tufts around it, the yarn is a backing end.

How many picks in a repeat, and how many dents in a repeat? Investigation will show this. It is best to cut the sample with a whole number of repeats in both warp and filling. Cut a sample approximately 2.0 to 3.0 inches on a side, if that much cloth is available. Pull out some backing ends from each side of the sample till only full repeats are left. Do not have the pile exposed on the edge, as it will be difficult to trim the sample. Pull out some picks, and make sure full repeats are left. Trim all four edges, and make sure the cut is straight.

The sample is now measured accurately, to one 1/100th of an inch. Seldom will it be an even inch or even half-inch, because full repeats are needed.

The sample is then weighed on a sensitive balance, using either grams or grains. In this analysis the sample measured:

2.03" (parallel to the filling) $\times$ 2.48" (parallel to ends) and weighed 1.0647 grams.

This type of goods will finish out 54 inches of pile, and the selvages are in addition to this width. Since selvages will vary from mill to mill, and are not figured in this weight, calculate the weight with 54 inches of pile only.

1.0647 grams $\times$ 54" finished width $\times$ 36" in 1 yd.
 $\frac{1.0647 \times 54 \times 36}{453.59} = .906384$ lbs. per running yd.

Have three small boxes available for holding the various yarns as the sample is pulled apart. Paper clip boxes, or typewriter ribbon boxes are fine for this purpose. It is good to write "pile"—"backing"—"filling" in the bottom of each box to identify each of the yarns.

Now remove all the warp and filling yarn from the sample and place them in their respective boxes. Make sure some of the pile tufts are not blown away. When the sample has been pulled apart, the weight of all the individual yarns should add up to the weight of fabric started with. It is best to weigh these as soon as possible before the yarns are handled, as moisture and grease from the hands may throw off the yarn weight. Also, never weigh the fabrics one day, and try to have the individual yarns match that weight the next day or the next week. The amount of moisture in the air will vary and an accurate reading is not possible.

This fabric was as follows:

Backing	.2945 grams
Filling	.2067 grams
Pile	.5635 grams
Total	1.0647 grams

This is the first check, and must add up to the sample weight.

After weighing the various yarns, they are then counted. In this fabric the figures were: backing 78; filling 69. It would be quite a large task to count all the pile tufts in

the fabric, but their number can be calculated.

From the investigation of the fabric, and pulling it apart, it is known that there was a row of pile tufts between each of two backing ends. This means a ratio of two backing to one pile. Since there are 78 backing ends, there are 78/2 or 39 rows of pile tufts in the sample. Here is one reason for cutting even repeats in the sample. Also from the investigation of the fabric, it was seen that there was a pile tuft every pick, and this sample had 69 picks. The product of these two figures is the number of pile tufts in the sample.

$$39 \times 69 = 2691 \text{ pile tufts}$$

The next step is to measure the length of the warp, filling and pile yarns that are in the boxes. Take an average of about six, as one reading may be a little high or low.

Yarns from this cotton velour fabric measured: backing 2.67 inches; filling 2.09 inches; pile .17 inches.

Count Of Backing

$$\begin{array}{l} 78 \text{ ends} \times 2.67" \times 453.59 \text{ grams/lb.} \\ 840 \text{ std. for cotton} \times 36" \text{ in 1 yd.} \times .2945 \text{ grams} \end{array} = \frac{10.607/1}{21.214/2} \text{ or } 10.607/1 \text{ or } 21.214/2 \text{ count of backing}$$

Count Of Filling

$$\begin{array}{l} 69 \text{ picks} \times 2.09" \times 453.59 \text{ grams/lb.} \\ 840 \text{ std. for cotton} \times 36" \text{ in 1 yd.} \times .2067 \text{ grams} \end{array} = \frac{10.465/1}{20.970/2} \text{ or } 10.465/1 \text{ or } 20.970/2 \text{ count of filling}$$

Count Of Pile

$$\begin{array}{l} 2691 \text{ tufts} \times .17" \times 453.59 \text{ grams/lb.} \\ 840 \text{ std. for cotton} \times 36" \text{ in 1 yd.} \times .5635 \text{ grams} \end{array} = \frac{12.177/1}{24.354/2} \text{ or } 12.177/1 \text{ or } 24.354/2 \text{ count of pile}$$

By inspection of all the yarns it was determined that the backing, filling and pile were two-ply.

Contraction Of Backing

The sample length was 2.48" and an end from it straightened out to 2.67".

$$\begin{array}{r} 2.67" \\ - 2.48" \\ \hline .19" \\ .19 \times 100 \\ \hline = 7.12\% \text{ contraction} \\ 2.67 \\ .19 \times 100 \\ \hline = 7.66\% \text{ crimp} \\ 2.48 \\ 2.67 \\ \hline = 1.0766 \text{ delivery} \\ 2.48 \end{array}$$

It can be seen that the delivery is crimp + unity.

Reed Width

Reed width is a proportion. The sample measured 2.03 inches, and a pick from it straightened to 2.09 inches. The finished width is 54 inches.

$$\begin{array}{l} 2.03" : 2.09 : : 54" : X \\ 54" \times 2.09" \\ \hline = 55.60" \text{ reed width} \\ 2.03 \end{array}$$

Ends Per Inch

78 backing ends in sample
2.03" = 38.42 ends per inch (finished)

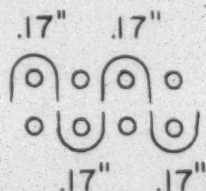
78
2 dents in sample
2.03" = 19.21 dents per inch (finished)

Picks Per Inch

69 picks in sample
2.48" = 27.822 picks per inch (finished)

Pile Delivery

Pile delivery is expressed in several ways, but the most common is a ratio. It is the number of yards (or inches) of yarn that goes through the pile delivery rolls, to make one yard (or inch) of cloth. Looking at the weave this double fabric interlaces as follows:



Each pile tuft is .17 inches long, and it takes .17 inches for each pick that is thrown. There are 27.822 picks per inch so:

.17" $\times$ 27.822 picks per inch = 4.7297 delivery.
This means that 4.7297 yards of yarn must pass through the pile delivery rollers to make one yard of cloth (double).

Reed Description

39 dents in sample $\times$ 54" finished
2.03" = 1038 dents total

1038 dents on 55.60" for body + selvage.

Reconstructed Weight

One reason for this is to check the accuracy of all the above figures.

Backing

78 ends in sample $\times$ 54" $\times$ 1.0766 delivery
2.03" $\times$ 840 $\times$ 10.607 count = .250712 lbs.

Filling

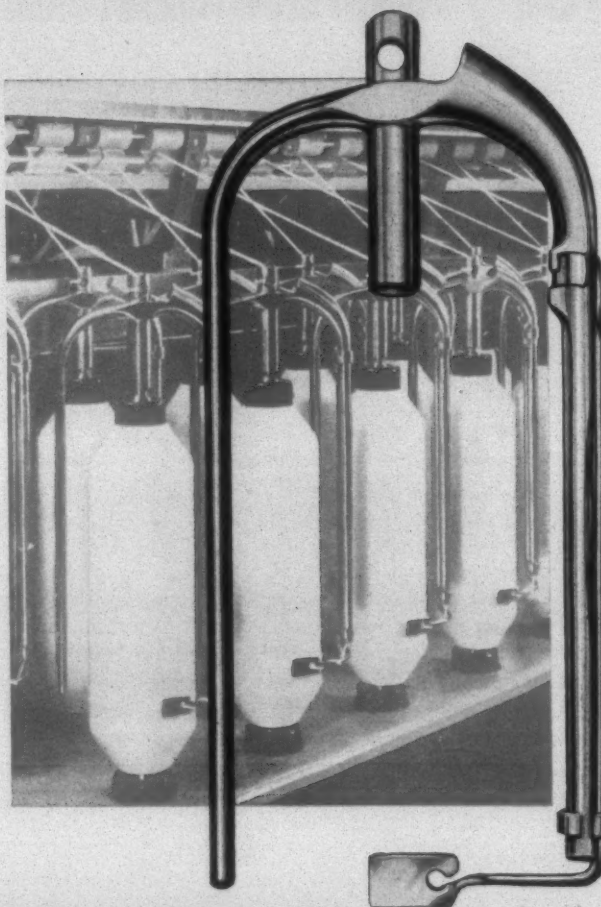
69 picks in sample $\times$ 55.60" reed width
2.48" $\times$ 840 $\times$ 10.465 count = .175976 lbs.

Pile

39 dents in sample $\times$ 2 ends/dent $\times$ 4.7297 dely. $\times$ 54" fin.
2.03" $\times$ 2 for double weaving / 840 $\times$ 12.177 count
= .47907 lbs.
TOTAL = .906395 lbs.

The weight from the trimmed sample was .906384 pounds per running yard, and the weight from the reconstructed fabric was .906395 pounds or .000011 pounds off. This is very little. A safe margin of error is $\pm$.005 pounds. If more than $\pm$.005 pounds off, go back and check the figures.

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The Effect Of Cure Variations On Properties of Resin Treated Fabrics

SUCCESSFUL RESIN TREATING OF COTTON ARTICLES FOR MINIMUM CARE FINISHES REQUIRES AN UNDERSTANDING OF THE PRINCIPLES INVOLVED

By P. B. ROTH and Q. M. RHODES*

A better understanding of the chemistry involved and the effect of application conditions is necessary in order to reap the profits waiting to be earned by resin treating cotton articles for minimum care finishes. However they are labeled—wash-and-wear, drip dry, no ironing—fabrics with functional resin finishes are not easily had. They require increased attention to the scientific developments of the past and of critical aspects of today's textile chemistry.

The first commercially important product for imparting wrinkle recovery to cellulosic fabrics was urea formaldehyde. While it is still used to a great extent, it has two important disadvantages. The first of these is a severe loss in strength caused by chlorine retention; the second is generally poor durability to laundering.

The introduction of melamine-formaldehyde, a member of the triazine class of compounds, provided a finish with improved durability to laundering and improved resistance to strength loss during chlorine bleaching. The earlier melamine-formaldehyde finishes tended to yellow when washed with chlorine bleach.

Ethylene urea-formaldehyde represented an improved chlorine resistant finish in that it did not discolor or lose strength when washed with chlorine, but it tended to show poor durability to laundering, especially if the laundering procedure included an acid souring step as is done in typical commercial operations. Also, there was a severe strength loss when subjected to an A.A.T.C.C. chlorine retention test after laundering.

The next step in producing a commercially important product with reduced chlorine retention was the development of triazone formaldehyde. Some triazones show strength loss when bleached during washing. In addition, they may contain some unreacted amines and some unreacted formaldehyde which are the sources of objectionable odors. The amine is the source of "fish" odor. Unreacted formaldehyde causes the treated fabric to liberate free formaldehyde during fabrication of apparel and its storage unless the fabric has been washed.

In 1958 the triazine class of compounds became the basis for a new product providing excellent wrinkle recovery, good durability to washing and good resistance to strength

loss as well as discoloration under practical laundering conditions which include a bleach.

Accelerators

Like the resin, the accelerators used in textile resin finishing have been evolved with certain characteristics. There are three main types of accelerators used in processing—ammonium salts, amine hydrochlorides, and metal salts.

Ammonium salts—such as ammonium chloride, ammonium sulfate and ammonium phosphate—were among the first accelerators used. While these salts are used to some extent for imparting shrinkage control, wrinkle recovery and other properties, they have some serious deficiencies. Since they consist of the salts of strong acids, they may tend to lower tensile strength if they are not applied properly. Also, these products may promote fish odors.

The second general class, the organic amine hydrochlorides, are sometimes called alkanolamine hydrochlorides. These are buffered salts and have less tendency to reduce strength in use and they show less tendency to cause the development of fish odors.

The third general class is based on metal salts such as magnesium or zinc salts. With this class of accelerator, fish odor development is not a problem. Metal salt accelerators such as magnesium chloride are very efficient, especially for the triazine class of resins. They reduce the tendency towards yellowing or losing strength when chlorine bleached. They promote the reaction of the resin with the fiber, thereby producing a more durable finish.

Application

In application, all of the compounds described are water soluble. The resin is dissolved in sufficient water to deposit a concentration of resin on cotton fabric of 3 to 10% solids. To the bath, such additives as the accelerator, softeners and in some instances a buffer are added. The fabric is first passed through the resin solution and then through squeeze rolls to remove the excess solution and to promote uniform impregnation. The fabric is then dried at carefully controlled temperatures in drying ovens or on frames. Excessive drying at a high temperature may tend to promote the development of fish odor on the finished fabrics, especially if the drying step is followed by high temperature curing. An efficient air circulation is needed to prevent migration of the resin solution to the fabric surfaces, a condition which may give nonuniform results. The fabric

*The Textile Chemical Department of American Cyanamid Co., Bound Brook, N. J. Adapted from a paper presented at the American Gas Association symposium held recently in Greensboro, N. C.

is then passed through curing ovens at temperatures from 270 to 360° F., where the reaction between the resin and cellulose occurs.

The most important factors affecting the rate of reaction between the resin and the cellulose are the temperature and the time of curing, the type and amount of resin and the type and amount of accelerator used. The most advanced statistical techniques of experimental design and statistical analysis were used to study the inter-relationships between these factors. The use of statistically designed experiments made it possible to obtain in a relatively short time as much information as could be gotten after many years of study using normal procedures. Modern methods of statistical analysis have shown that the data has a high degree of precision and accuracy. Although the results to be presented are based on laboratory applications, their accuracy has been substantiated by applications made under realistic conditions in mill production runs.

Initial Wrinkle Recovery

Results of a study made on the effect on wrinkle recovery of varying the time and temperature of cure on four resins, urea-formaldehyde, ethylene urea-formaldehyde, melamine-formaldehyde and a modified melamine-formaldehyde applied with an ammonium salt accelerator showed: (1) the wrinkle recovery obtained with urea-formaldehyde which is generally low does not change much when the time or temperature of cure is changed; (2) the wrinkle recovery of the melamine finishes is quite dependent on the temperature of cure but is not changed as much by variations in the time of cure; and (3) curing temperature has a profound effect on the wrinkle recovery of ethylene urea-formaldehyde. Curing temperatures above 320° F. actually produced lower wrinkle values. This is probably due to the breaking down of ethylene urea-formaldehyde at high temperatures in the presence of a strong acid.

What happens when an alkanolamine hydrochloride accelerator is used? According to the study: (1) the wrinkle recovery obtained with the urea-formaldehyde is generally low and is not affected greatly by changes in curing conditions; (2) this system is very efficient for ethylene urea-formaldehyde because high wrinkle recovery is obtained over the entire range of curing temperatures used; and (3) the melamine-formaldehyde shows a wide range of wrinkle recovery values depending on the time and temperature of cure.

When a magnesium salt was used as the accelerator, the study showed: (1) although this accelerator is quite effective for all four types of resin, it is more efficient for the melamine-formaldehyde and ethylene urea-formaldehyde than the two accelerators previously discussed; and (2) the effect of variation of the curing conditions is generally the same as for the alkanolamine hydrochloride.

Newer Resins

One of the newer textile resins is based on triazine formaldehyde. The effect of variations in time and temperatures of cure on the wrinkle recovery of finishes of triazine formaldehyde applied with alkanolamine hydrochloride and magnesium and zinc salts as accelerators are: (1) with the alkanolamine and magnesium salt accelerators increases in either cure time or cure temperatures produce increases in wrinkle recovery; (2) the zinc salt accelerator is more ef-

ficient at lower temperatures and times of cure but the magnesium salt accelerator provides higher wrinkle recoveries at higher temperatures especially as the time of cure is increased; and (3) although zinc salt accelerators are efficient they have two deficiencies (a) white fabrics treated with a brightener and a zinc salt accelerator usually turn yellow after several minutes exposure in bright sunlight; and (b) zinc salts, under some conditions, especially at high concentrations and high curing temperatures, may cause yellowing or shade changes with certain dyes. Although zinc salt accelerators have been successfully used in the past, it is advisable to check for these deficiencies where these effects may develop.

Durability Of Wrinkle Recovery

The effect of variations in the time and the temperatures of the cure on the durability of wrinkle recovery initially and after 16 Laundromat washes at 140° F. with chlorine bleach was studied. The effect of these variations when an ammonium salt accelerator was used with the four resins are: (1) in general, the higher the cure temperature, the better is the durability; (2) variations in cure time do not have much effect on durability; and (3) the ethylene urea-formaldehyde finish and the urea-formaldehyde finishes have generally poor durability regardless of the curing conditions.

The durability of the finish when an alkanolamine hydrochloride accelerator is used is somewhat better. The melamine-formaldehyde finishes show better durability than the ethylene urea-formaldehyde or urea formaldehyde finishes.

The significant points when magnesium salt accelerator is used are: (1) the level of wrinkle recovery is higher than previously shown and the durability is equal or better for all four resins; and (2) at the shorter cure time, the 350° F. cure resulted in poorer durability than the 320° F. cure for the ethylene urea-formaldehyde finish. This indicates the tendency of ethylene urea-formaldehyde to break down at high cure temperatures.

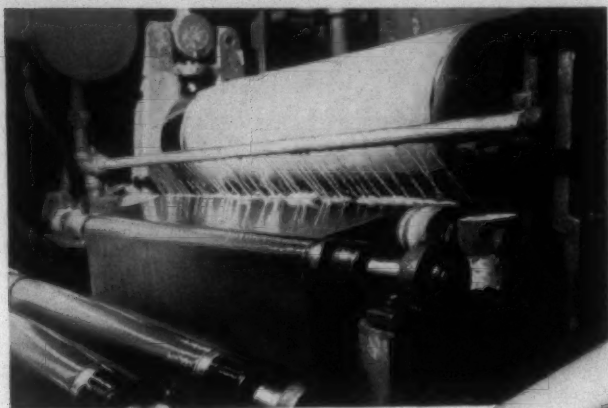
The effect of variations in time and temperature of cure on the durability of wrinkle recovery of finishes obtained by applying triazine formaldehyde with an organic amine, magnesium or zinc salt accelerator are: (1) finishes obtained with the triazine formaldehyde and metal salt accelerators show good durability; (2) the finish obtained with the alkanolamine hydrochloride accelerator shows very poor durability; and (3) the finish obtained with the zinc salt accelerator shows high wrinkle recovery values after washing because the initial wrinkle recovery values are higher.

Tensile Strength

The wrinkle recovery obtained by applying a textile resin to a cellulosic fabric is always accompanied by a loss in tensile strength. In general, the greater the increase in wrinkle recovery, the greater the loss in tensile strength will be. Normally, this strength loss is not due to acid damage. If the resin is removed by stripping, the original tensile strength of the fabric is restored.

The points of interest in the variations in strength for the four resins applied with ammonium salt accelerator with varied time and temperature of cure are: (1) although time of cure had little effect on strength, as the cure temperature was increased the strength decreased; (2)

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although the melamine-formaldehyde finish had much higher wrinkle recovery than did the urea-formaldehyde finish, the tensile strength loss was not greater except after long curing times at high temperatures; and (3) at the higher cure temperatures, the modified melamine-formaldehyde finish had equal to slightly higher wrinkle recovery than did the ethylene urea-formaldehyde finish. The investigations show that under these same curing conditions, the modified melamine-formaldehyde also has higher tensile strength.

Where an alkanolamine hydrochloride accelerator was used on the ethylene urea-formaldehyde finish, very interesting effects of cure variations were noted on tensile strength. Curing time and temperature had little, if any, effect on the wrinkle recovery. Increases in time or temperature of cure caused large decreases in tensile strength. Increases in time or temperature have very little effect on the tensile strength of the melamine-formaldehyde treated fabric at temperatures from 305 to 365° F.

Data previously presented on wrinkle recovery showed that the magnesium salt accelerator produced wrinkle recovery that was equal to or slightly higher than that produced by the organic amine salt. The study also shows that, in general, the use of magnesium salt accelerator also results in higher strength than was obtained with the organic amine salt. A decrease in the curing temperature will result in a substantial improvement in tensile strength with the magnesium-type resins. With ethylene urea-formaldehyde and especially with urea-formaldehyde, changes in cure temperatures have much less effect on tensile strength.

In general, the tensile strength of the finishes obtained with the zinc and magnesium salt accelerators are about equal at the shorter cure times. The strength obtained with the zinc salt accelerator is somewhat better after longer curing time but the wrinkle recovery was not as high.

Other Properties

Although the information presented so far has been concerned with the effect of cure conditions on wrinkle recovery and tensile strength, it should be remembered that many other properties obtained with textile chemicals are affected by variations in cure conditions. Two of these properties are liberation of free formaldehyde from resin-treated cotton fabrics, and strength loss due to chlorine retention.

The problem of the liberation of formaldehyde during the storage of resin-treated goods has become increasingly important in recent years. The amount of formaldehyde liberated is dependent on several factors which include the amount of free formaldehyde present in the product, the choice of resin, the accelerator used and curing conditions.

Applications of organic amine, magnesium salts and zinc salts as accelerators were studied on fabrics treated with the four resins. Cure temperatures were varied from 300 to 370° F. and the time of cure was varied from one to three minutes.

According to the findings:

(1) In general increases in time or temperature of cure resulted in less liberated formaldehyde.

(2) Those conditions that decreased the liberation of formaldehyde, that is, high cure temperatures and longer cure time, also increased the wrinkle recovery.

(3) At cure temperatures below 355° F., the urea-formaldehyde and ethylene urea-formaldehyde finishes liberated

more formaldehyde than did the melamine or triazine formaldehyde finishes. Changes in cure temperatures had a greater effect on the amount of formaldehyde liberated from the treated fabric than did changes in the time of cure.

(4) All three accelerators are efficient in minimizing formaldehyde liberation at high cure temperatures, however the magnesium salt is less effective than the zinc or organic amine salt at lower cure temperatures except for the ethylene urea-formaldehyde finish. Here the zinc salt was the least effective.

Chlorine Retention

One of the recognized deficiencies of many finishes is their ability to retain chlorine after having been laundered with bleach. When the fabric is subsequently ironed or pressed, this retained chlorine may be released as hydrochloric acid and tender the fabric.

Urea-formaldehyde-treated fabrics may lose up to 100% of their strength when treated for chlorine retention by the A.A.T.C.C. test method. Changes in curing conditions have little effect on this property. There are some resin finishes which show little or no strength loss due to chlorine retention when tested before washing. However, some of these may lose more strength after they have been laundered. The amount of strength loss due to retained chlorine when determined after washing is affected by the cure.

Table 1 shows the effect of cure on strength loss due to chlorine retention after washing for a triazine formaldehyde and an ethylene urea-formaldehyde finish. Triazine formaldehyde finishes are very durable through repeated washes. Ethylene urea-formaldehyde finishes are much less durable.

The strength loss due to retained chlorine after five Sanforize washes was low for the triazine formaldehyde finish that had been cured two minutes or more. Increasing the time or temperature of cure improved the resistance to chlorine retention after five Sanforize washes of the triazine formaldehyde finish.

The ethylene urea-formaldehyde finish had poor resistance to strength loss due to retained chlorine after one Laundromat wash at 140° F. An increase in cure time decreased the strength loss somewhat. An increase in temperature increased the strength loss due to chlorine retention finish of the ethylene urea-formaldehyde finish.

This increase in strength loss that accompanies an increase in cure temperature is probably caused by a breakdown of the ethylene urea-formaldehyde at high temperatures. This is further indication of the tendency for ethylene urea finishes to break down at high curing temperatures.

TABLE 1
A.A.T.C.C. Chlorine Retention
(% Strength Loss)

Cure	Triazine Formaldehyde (After 5 Sanf. Washes)	Ethylene Urea-Formaldehyde (After 1 Laundromat Wash)
330° F.		
1 Minute	42	57
2 Minutes	21	51
3 Minutes	9	45
4 Minutes	6	39
350° F.		
1 Minute	33	71
2 Minutes	12	65
3 Minutes	1	59
4 Minutes	0	53

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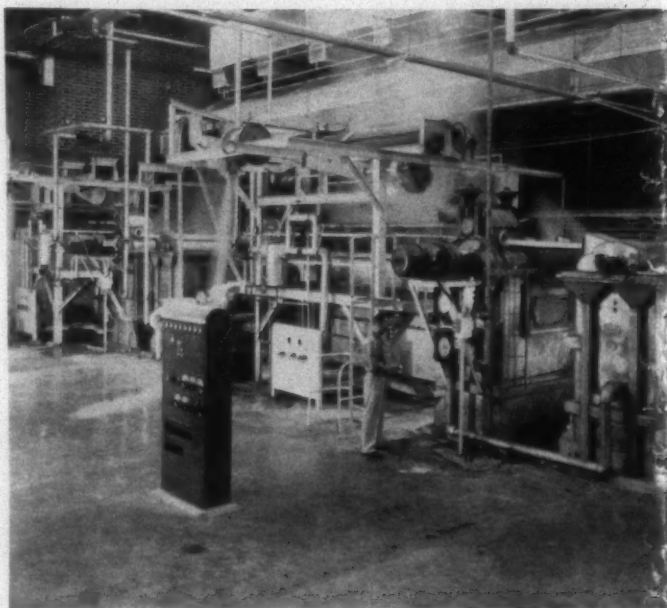
Carlisle Finishing Company

THIS UNIT OF CONE MILLS CORPORATION'S FINISHING DIVISION IS ONE OF THE NATION'S MOST MODERN FINISHING PLANTS

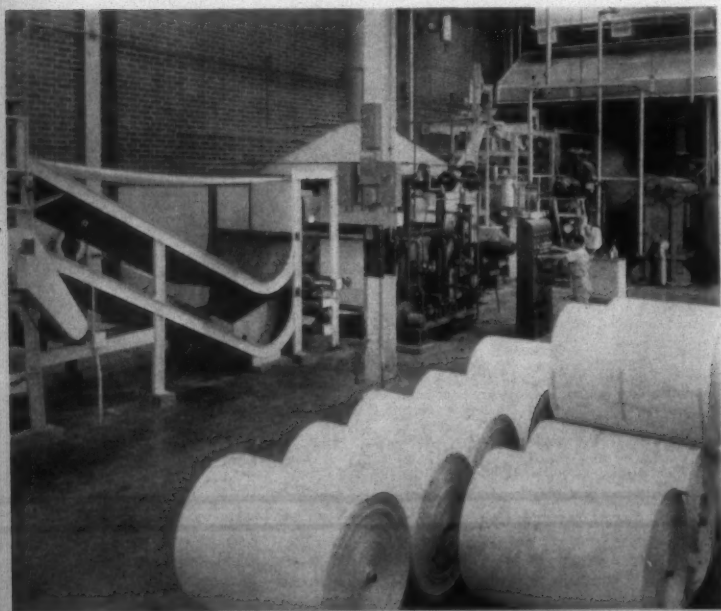
FROM a rather shaky beginning with almost totally inexperienced help, Carlisle Finishing Co., Carlisle, S. C., has taken its place as one of the most modern finishing firms in the U. S. with 12 printing machines turning out between 2 and 2½ million yards per week.

Since its founding in 1956 as a unit of Cone Mills Corporation's finishing division, Carlisle has increased operating efficiencies to 50% for printing and 85% for finishing, dyeing and mercerizing. At first blush these percentages may seem to leave something to be desired; however, it must be remembered that machine down-time results from such factors as pattern changes on the printing machine, and style, color and finish changes on the finishing, dyeing and mercerizing ranges.

During the last three years the company has had to face the problems common to all finishers plus a few individual ones. With other finishers it has faced the problems of weakening price structure, modification of equipment and methods to apply new finishes, difficulty in finishing low quality foreign-made goods, and spiralling wage rates. Its biggest single problem has been the training of almost the entire labor force. At the beginning some 40 supervisors and apprentice printers were recruited from the other



After remaining in the desize J-box (left background) for 45 minutes to one hour, goods are pulled through two rope washers, a peroxide saturator, and into a peroxide J-box holding approximately 25,000-30,000 yards. Goods stay in peroxide J-box under live steam for 1½ to 2 hours, are washed and pulled into concrete storage bins.



Greige goods are batched at the feed end of this continuous desizing and bleaching range which runs approximately 100,000 yards per shift. The ends of the rolls of cloth are sewn together before it is fed into scraws (left). Goods are then singed and run through desize pad before going into the 12,000-15,000 yard capacity desize J-box.

plants of the finishing division—of the rest of the 800 employees, only about 2% had ever worked in a finishing plant.

Carlisle's finishing equipment occupies a magnificent 650,000-square-foot brick, steel and concrete building of contemporary design. Housed separately are a filtration plant with a four million gallon per day capacity and a boiler house containing three coal-fired boilers each with a 75,000-pound capacity. The finishing plant has 30-foot ceilings throughout. Mezzanines have been provided for color mixing, overhead dry can mountings, and hoods.

The ever-present problem of finished warehousing is taken care of by the 30-foot ceilings which provide space for about 18,000 cartons of finished goods.

Water Supply

An adequate water supply is always a big factor in finishing plant location. Carlisle's water is supplied by the nearby Broad River. The plant uses an average of 2½ to 3 million gallons a day. The flow of the river is about 90 million gallons a day. About one million gallons is the capacity of the current water storage facility. Another

storage basin with a two-million-gallon capacity is under construction.

Three methods of preparation are employed by Carlisle, generally speaking. They are: (1) straight bleach; (2) mercerize and bleach; and (3) pre-bleach and boil-off, then mercerize and dye. Practically the whole plant operates as a service to the printing machines.

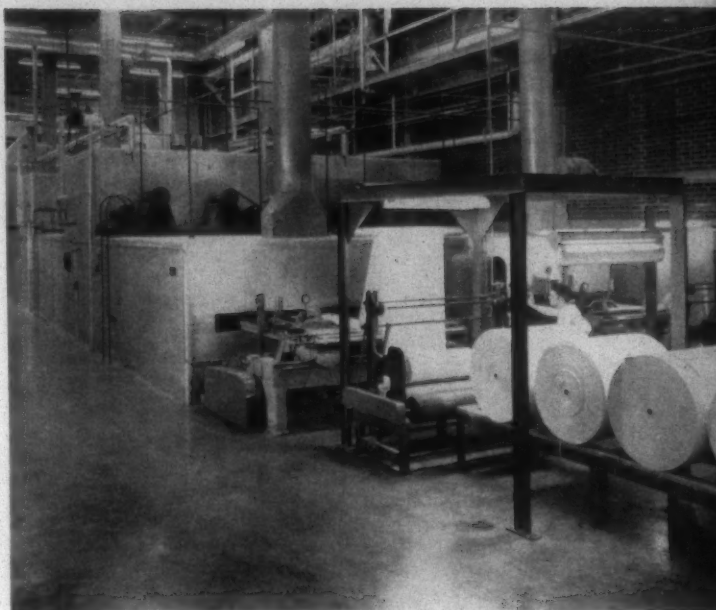
The continuous straight bleach range averages 100,000 yards per eight-hour shift. The process starts with batch goods on the floor or trucks (or run off rolls) behind the feed end of the range. The cloth is singed on both sides with a gas flame. Caustic soda desize solution is applied by pad to the cloth and it then enters a desize J-box holding 12,000 to 15,000 yards for 45 minutes to an hour with live steam circulating throughout. The cloth goes through two rope washers, a peroxide bleach saturator and another J-box holding approximately 25,000 to 30,000 yards under live steam for 1½ to 2 hours. It then goes through two more rope washers and is pulled into one of the nine concrete storage bins, each of which has a capacity of 30,000 yards.

Carlisle also has four kiers for bleaching such goods as soft-filled sheetings, lawns and voiles with a minimum of tension. Kier-bleached goods are desized on a pad with caustic soda and pulled into concrete storage bins. After the desize solution has had time to work, the goods are pulled into kiers. In the kier they are boiled, rinsed and bleached with peroxide.

After bleaching and scouring soft-filled sheetings go on tenter frames. A softener is padded on the goods to facilitate napping. Goods are tented to desired width and dried with 8 to 10% moisture left in.

Mercerizing Range

Goods going through the continuous mercerizing range are first wet out. Then they go through a caustic soda bath with double squeeze rolls (average goods get 50° twaddle treatment). The cloth is tented to the width desired and passes through four cascade washers with vacuum extractors while in the tenter clips. The cloth then passes through a

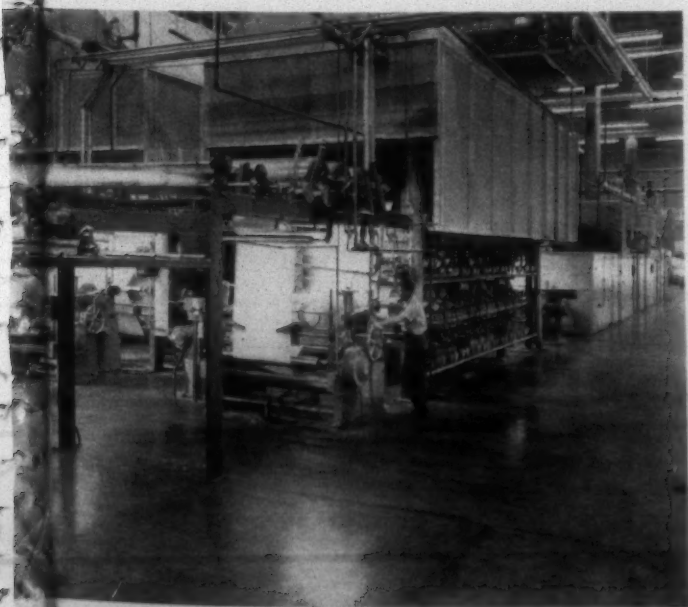


All of Carlisle's tenter ranges have automatic doffing mechanisms on the delivery end. Large rolls are doffed and transferred to storage without stopping the range. Each range also has automatic moisture controls.

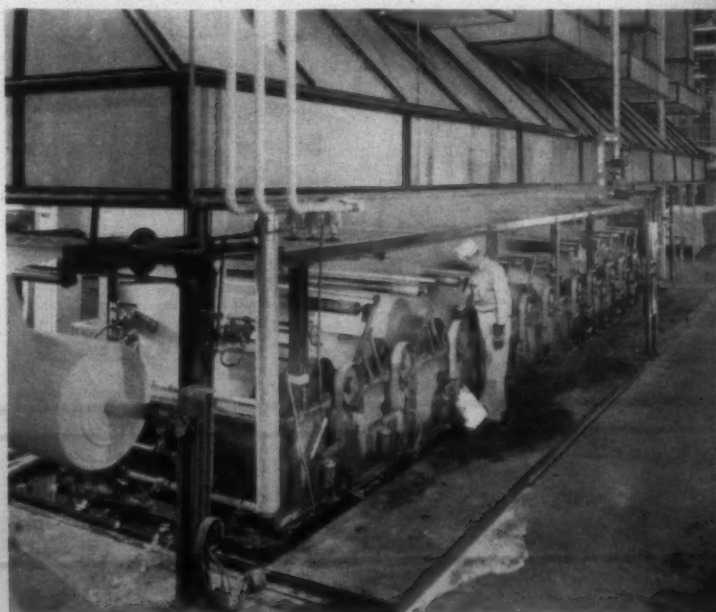
set of squeeze rolls, eight box washers, a 50-can stack of steam dry cans and is wound with automatic doffing. An average sheeting runs on the mercerizer at 100 to 125 yards per minute. Caustic solution drawn out of goods by extractors is reclaimed.

Napping

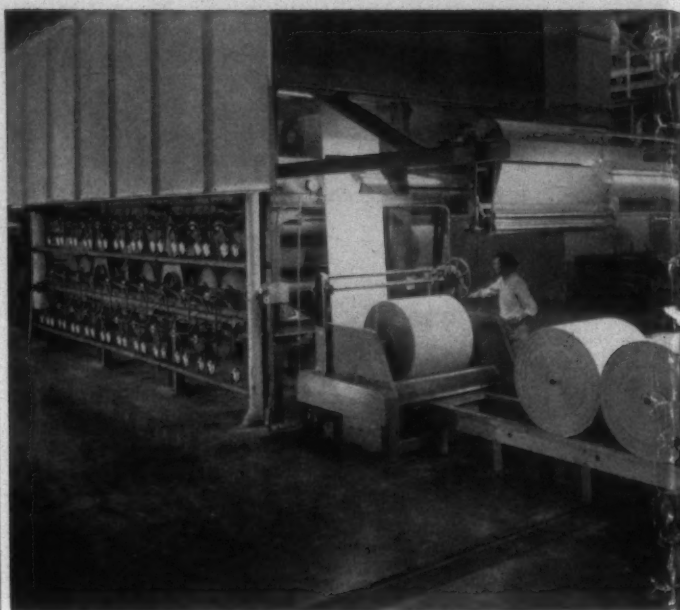
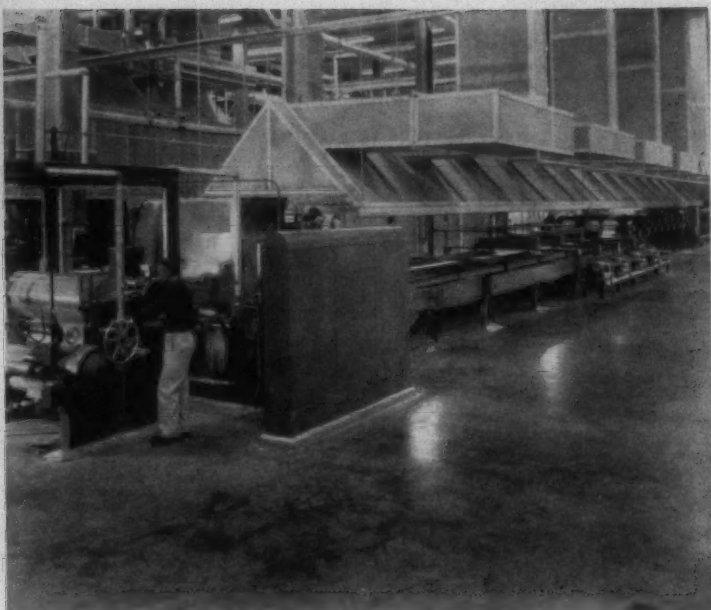
After bleaching and softener application, soft-filled sheetings are ready for the napper room. Carlisle has 42 nappers in 21 two-napper units. The finishing plant has Gessner napper units for special naps. Carlisle does its own napper roll re-clothing and grinding. A constant check is kept on results from nappers to determine when grinding is needed.



Carlisle has two tenter-drying ranges with 50-pound dry cans for pre-drying. Goods are tented to exact width before printing.



Heavy goods requiring open width processing are run on this progressive jig, or boil-off machine.



Goods running in the mercerizing range are first wet-out then run through caustic pad (left entering end). After tentering and washing, goods are dried on 50-pound cans and rolled up (right delivery end).

In napping goods from various mills, Carlisle finds the biggest trouble is with uneven twist in filling. A bobbin of hard twist filling mixed in a roll of cloth will not nap evenly and is subject to being torn by the napper wire. In other cases almost entire rolls of cloth will be made of hard twist filling. This cloth requires an undue number of passes through the napper before the nap is raised to its proper height, if indeed, it can be raised at all. Slack and tight selvages are always a source of trouble in a napper room. Lint is drawn from the nappers pneumatically and is collected in bags. The napper waste is baled and sold.

Dye Ranges

Approximately two-thirds of the goods run at Carlisle are printed on white goods, the balance being run on one of the company's two dye ranges. Napped and/or printed goods are run on the ranges at 5,000 to 6,000 yards per hour. Carlisle uses naphthols, directs, after-treated directs, sulfurs, vats, etc., dyes in its operation. No commercial dyes are used.

Goods to be put through the dye ranges first have the color padded on and then are dried at 320° F. in steam heated dryers. After a chemical reduction pad, the goods pass to the steamer where they are steamed at about 218° F. After steaming, the goods pass through the box washers and the dry cans. Both ranges have Williams units for use when desired.

In addition to its dye ranges, Carlisle also has ten tensionless dye jiggs for use on short runs of regular print goods and for wide draperies.

Printing Machines

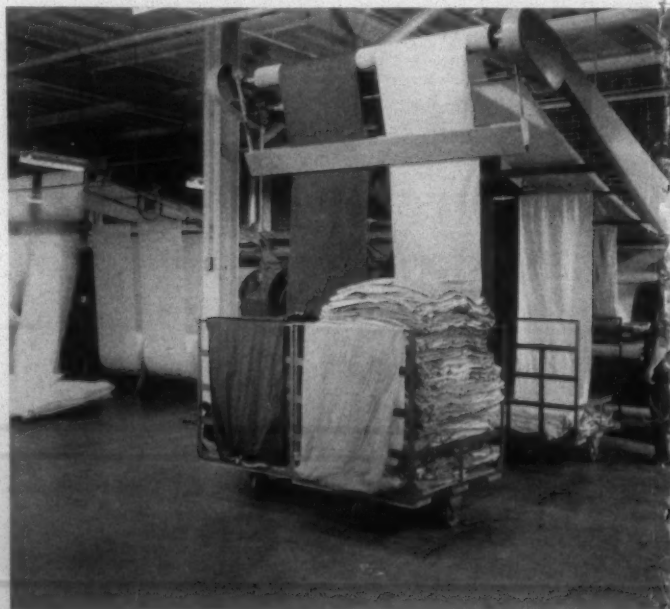
Ten of the company's 12 printing machines were installed three years ago. Two have been added since that time and space has been made available for eight additional machines.

The colors are put in a suitable gum base. The mixed color is always thicker than water and sometimes as thick as applesauce, depending on the pattern to be printed. Thin

sharp lines must have a different viscosity of color from heavy lines.

Three men operate a printing machine—the printer, the color man and the back man. The printer is in charge of the machine. He sets up the pattern and checks on it throughout the run. The color man mixes the colors and assures an adequate supply of color on hand at all times. The back man feeds the goods to the machine, sees that the cloth is running straight and supplies color to the back boxes.

The bulk of seconds made on the printing machines are caused by misprints, snaps, lint, wrong color, damaged rolls, etc. Over 5% seconds is considered bad on printing machines. Each roll of cloth printed is credited to the



Carlisle operates Gessner nappers for use on special fabrics or naps. Carrier and worker roll speeds are dial-controlled. Biggest napper problems stem from uneven twist or hard twist filling in the fabric.



The napper room at Carlisle has 42 nappers operated in 21 two-napper units. Goods are bleached and have a softener application prior to being napped.

proper machine and printer. Records are kept to determine the amount of seconds made by each printer.

After printing, develop colors are sent to agers. Pigment colors are after-cured on finishing ranges. Vat printed goods are aged under steam for reduction and development of color. Naphthols are pre-reduced before printing and are aged in acid and under steam for development of color.

Carlisle has two agers each holding 250 to 300 yards of fabric. The agers run average fabrics at about 75 yards-per-minute. Some goods run at 100-yards-per-minute.

Types Of Finishes

Various types of finishes are applied at the plant in-

cluding: (1) calendered; (2) wash-and-wear; (3) Sanforized; (4) durable water-repellant; and (5) regular light starching. Calendering is done mostly on dressgoods although some draperies are given the processing. Glazed, shiny appearances are given to the face of fabric by the application of a special finish and a hot calendering.

Wash-and-wear finishes applied by Carlisle are mostly resin treatments but the company is also a Belfast licensee. About 80% of dressgoods and shirtings run by the company are wash-and-wear finished. The company has four Sanforizing machines which process goods to 1% residual shrinkage. About 80% of all Carlisle's printed napped goods are Sanforized.

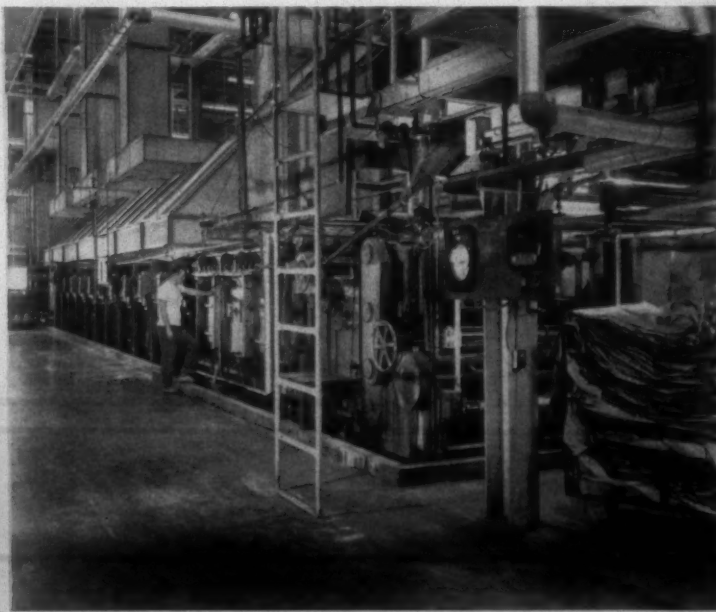
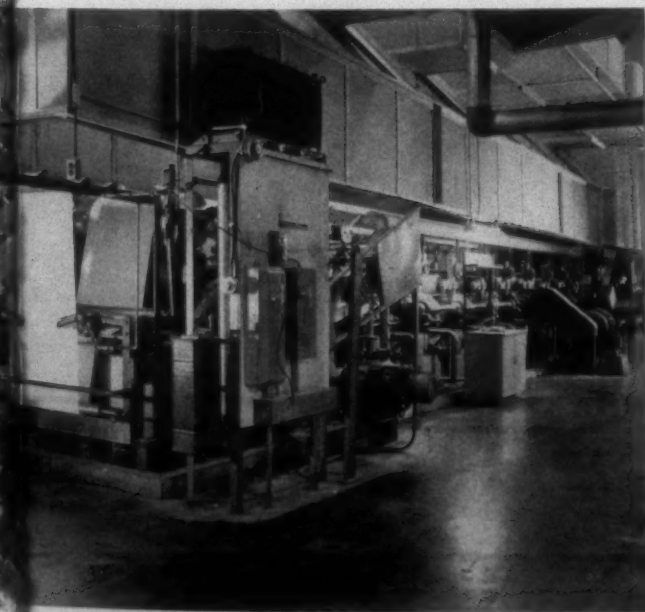
The company has three finishing ranges. Two of the ranges have pre-dryers and the other has steam dry cans. Two of the three ranges also have gas-fired after-curers for resin finishes. Each of the finishing ranges have Hunter automatic moisture controls.

Packing And Inspecting

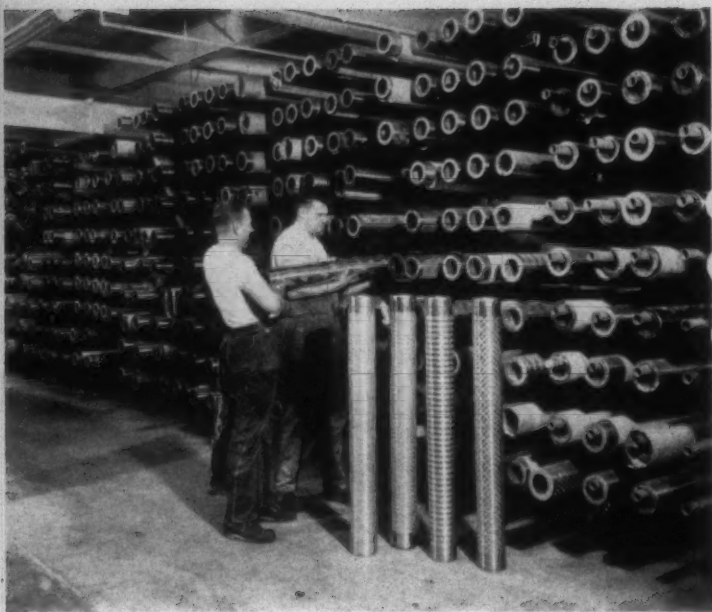
There are 13 folders and four double-and-roll machines used in Carlisle's inspection and packing department. Goods are inspected and yarded. The department also has five tube winding machines. Most printed fabrics are packed in flat folds. The majority of the draperies finished are packed on rolls. The packing room has an automatic carton strapping machine and uses roller conveyors throughout. Designed for efficiency, some 2 to 2½ million yards per week are put through the room.

Engraving Rollers

Printing rolls are engraved for Carlisle by outside engravers. Pattern designs are put on zinc plates. Copper rolls are engraved with multiple styli from the zinc plates. The copper roll is then acid-etched and electrolytically chrome-plated. Carlisle's investment in copper rolls is approximately one million dollars. Some \$100,000 worth of copper print-



Two dye ranges, each with a 5,000 to 6,000 yard per hour capacity of napped and/or printed goods (left entering end) using naphthols, directs, after-treated directs, sulfurs, vats, etc., colors are in operation at Carlisle (right delivery end).



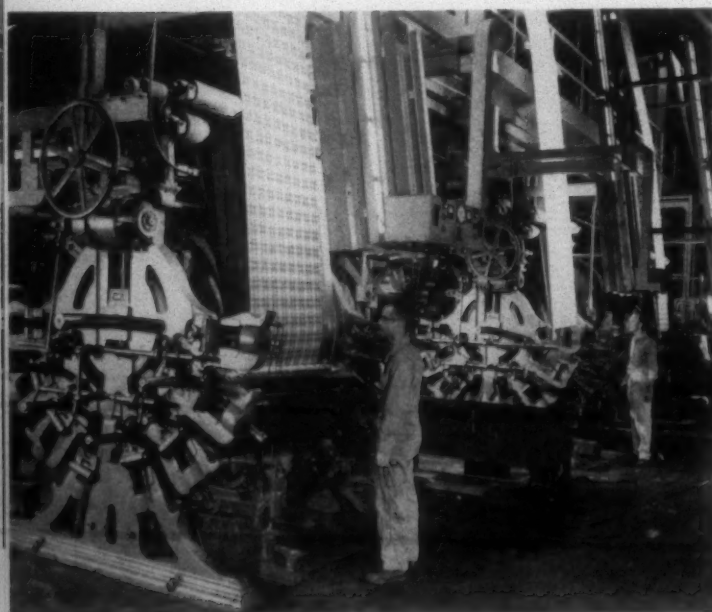
Stored in racks on the lower floor of the plant, Carlisle's copper printing rolls represent an investment of approximately one million dollars. Some \$100,000 worth of copper rolls is necessary for each printing machine.

ing rolls is necessary for each printing machine.

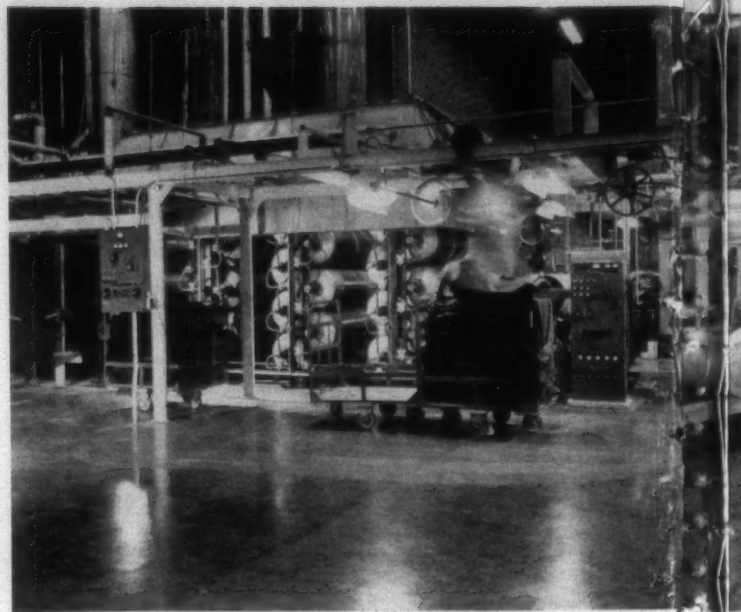
Located on the plant's lower floor is a modern machine shop, storage areas, d.c. convertors, maintenance areas, J-boxes, etc. The machine shop is completely new and is equipped with lathes, drill presses, gear hobs and machine tools of various descriptions. Carpenter shops and electrical shops are similarly complete. The company is equipped to do almost any maintenance or building job.

Efficiency Boosts

Major boosts in efficiency at the big plant are credited to the effectiveness of the training program and the use of



Of the 12 printing machines at Carlisle, ten were installed when the plant started up three years ago. Practically all types of colors are used in printing.



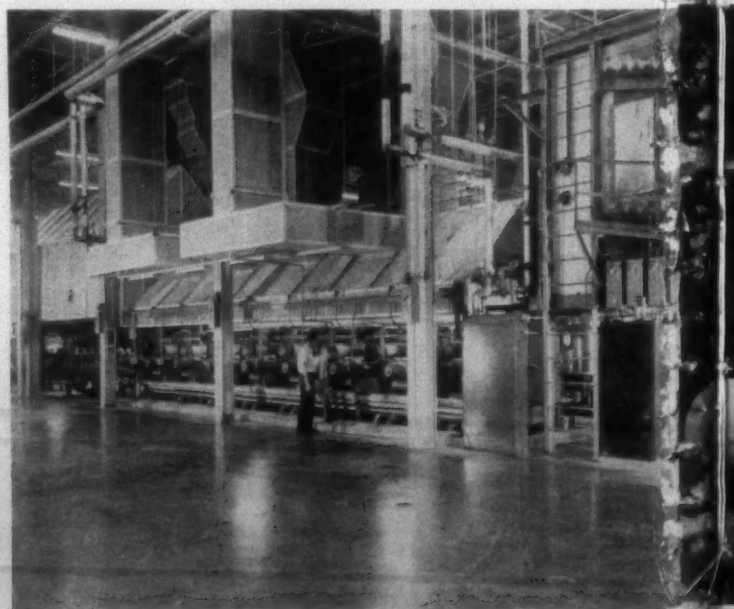
Each of the various bleaching, mercerizing, dyeing and finishing ranges at Carlisle is fully instrumented. Speed, tension and moisture are controlled at central stations on each range.

cost accounting methods. Cost accounting, of course, pinpoints inefficient, high cost operations in order that remedial action may be taken by supervision.

In spite of the fact that it started operations during a particularly rough time for finishers, Carlisle has made steady improvements in dollar volume. Over 50% of Carlisle's production is devoted to public finishing, meaning services for companies other than Cone Mills Corporation.

New Equipment Installation

An expansion program, scheduled for completion this year, is underway in various departments at Carlisle. The program is designed to improve plant balance. Costing a



This soaping range has a gas-fired curing oven (upper right) mounted overhead. This feature is made possible by the 30-foot ceilings through the 650,000-square-foot brick, steel and concrete building.



This view of one of Carlisle's finishing ranges shows the general spaciousness of the building and the beautifully finished hardened-concrete floors.

total of \$1 million, the additional equipment includes: (1) rope bleaching range; (2) new set of cans and tenter frame; (3) new mercerizing range; (4) four printing machines; (5) one loop ager; (6) a new finishing range and curer with rolling calender; and (7) a two million gallon water reservoir. Printing capacity of the plant will be upped to about 15 million yards per month with the expansion.

P. C. Gregory is president of Cone Mills Corporation's finishing division. The division consists of, in addition to Carlisle: Union Bleachery—bleaching and plain shade dyeing; The Granite Finishing Plant—specializing in corduroy; and Proximity Print Works—special prints and finishes. Gregory began his career with Union Bleachery in 1933.

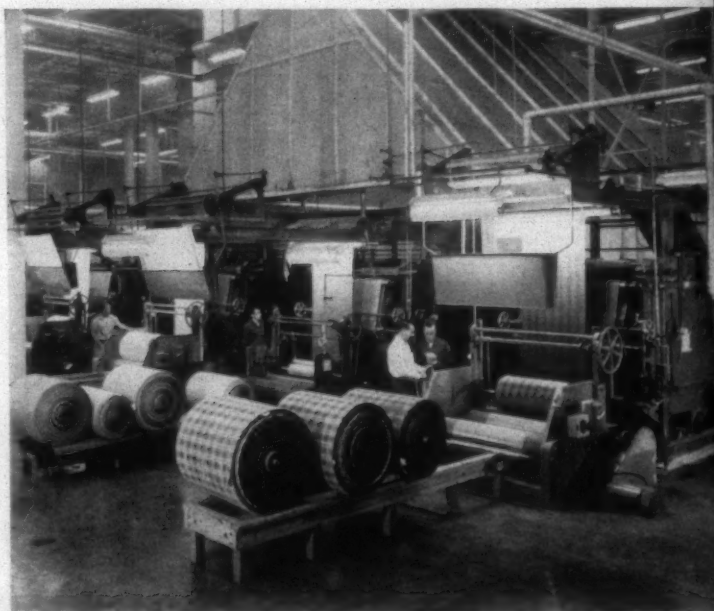


Gregory

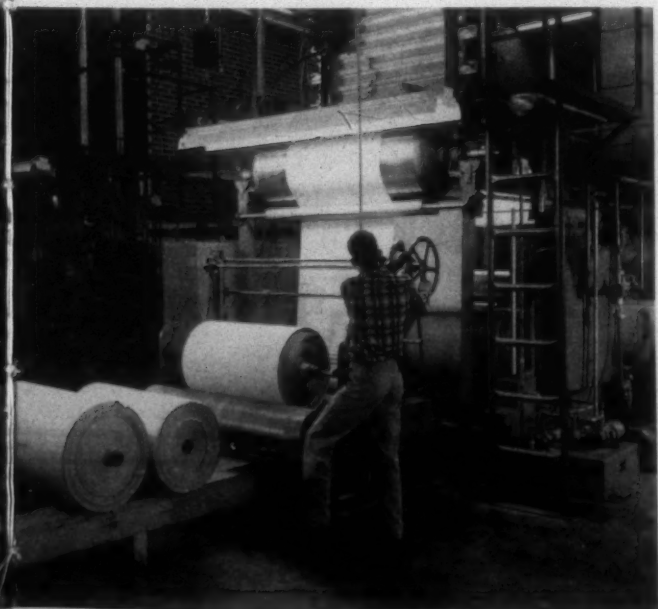


Jones

He was appointed assistant general manager of the plant in 1945 and was made general manager in 1948. He later was named executive vice-president of Cone Mills Corporation's



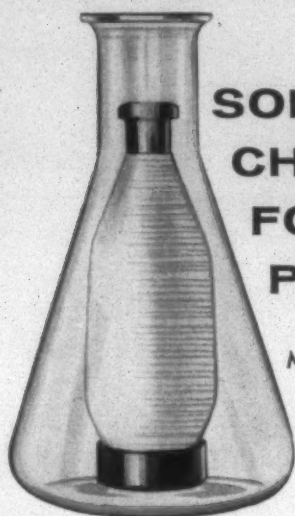
About 80% of all the printed napped goods run by Carlisle are Sanforized on these four machines. A single hood serves all four units which process goods to 1% residual shrinkage, have rubber blankets, and automatic doffing wind-ups.



Calendering is done on dressgoods and some draperies by application of a special finish, hot calendering, infra-red drying, cooling and rolling-up. All four of the calendering machines run by Carlisle have automatic doffing.



Men are used to operate the 13 folders and four double-and-roll machines in Carlisle's inspection and put-up department. Most printed fabrics are packed in flat folds. Some 2 to 2½ million yards per week pass through the department.



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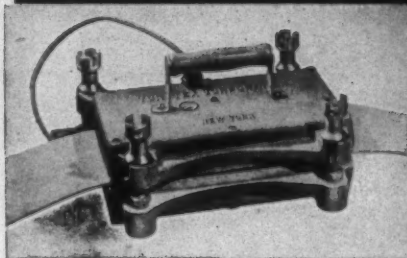
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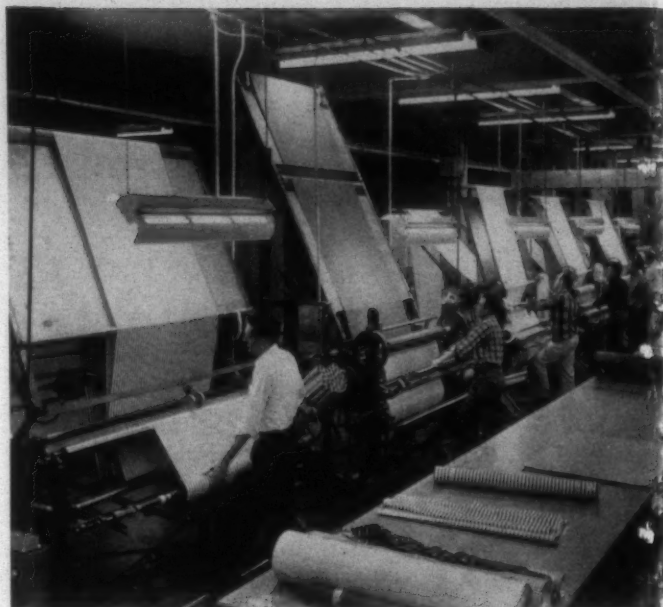
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Carlisle's inspection department has five tube winding machines. The majority of the draperies and wash-and-wear finished goods run at the plant are shipped on rolls.

finishing division after the company purchased Union Bleachery.

The finishing division operates as a business completely separated from the greige mills. In fact, the individuality and personality of each of the four plants in the division is preserved. The division has its own sales offices located in New York City at 111 West 40th St.

E. E. Jones is general manager of Carlisle and a vice-president of the finishing division. He started working in the finishing industry in 1927 and became executive vice-president of U. S. Finishing Co. in 1954. Jones joined Carlisle in 1958.



A fully equipped and staffed chemical and physical testing laboratory is maintained by Carlisle. Located at mezzanine level inside the manufacturing area, the laboratory is used for running all color fastness tests, color matching, finish formulations and plant process controls.

The Application Of Switchgear To Textile Mills

A GENERAL SURVEY TO ACQUAINT PLANT ENGINEERS WITH MODERN PRACTICES IN SUCH SYSTEMS

By R. N. WILSON*

THE growing trend toward increased use of the load-center principle in industrial distribution systems should prompt an examination of the four most common basic load-center circuit arrangements and their economy and reliability factors.

While the application of switchgear to textile mill distribution systems involves many factors which cannot be adequately covered in a single article, a general survey of modern practices in such systems should be helpful to the plant engineer.

Simple Radial System

Most common arrangement is the simple radial system (Fig. 1) which has only one primary feeder and one transformer through which a given secondary bus is supplied. With adequate equipment properly installed, this system is safe, economical, easy to operate and flexible.

While the primary cable and non-inflammable liquid-filled transformer in the simple radial system have a high degree of reliability—approximately one failure per mile per hundred years for the former and one failure for every 2,500 transformer years—its chief disadvantage is the complete de-energization of the load area for maintenance.

*Application Engineer, Switchgear Dept., Allis-Chalmers Mfg. Co.

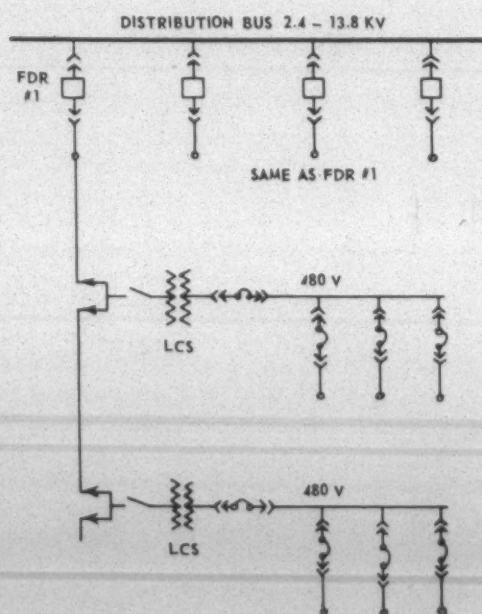


Fig. 1 - Radial distribution system (modern).

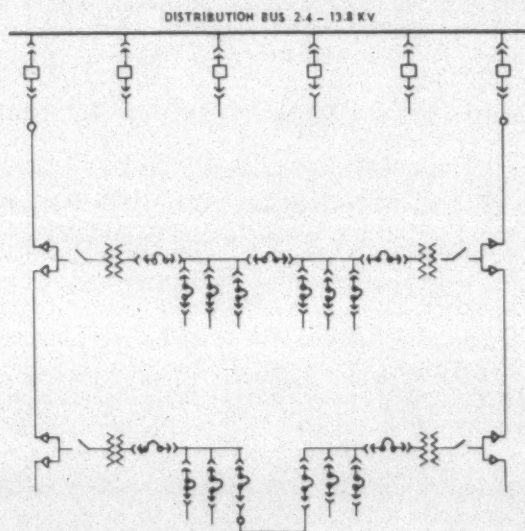


Fig. 2 - Secondary selective system.

Secondary Selective Arrangement

To avoid de-energizing the load area during scheduled shutdowns and to obtain greater flexibility, the simple radial system can be modified with a normal open tie breaker between pairs of double-ended substations to form a "secondary selective arrangement" (Fig. 2).

During normal operation, each substation services its own load area independently as in a straight radial system. In case of an outage of one primary feeder or transformer, the transformer secondary breaker of the de-energized substation is opened and the tie breaker is closed allowing the energized transformer to feed both load areas.

Since the secondary selective system operates normally as a simple radial, it is as safe, easy to operate and uncomplicated as the radial. However, it may be from 5 to 75% costlier, depending upon the reserve transformer capacity required. The straight radial and secondary selective system are used in about 90% of industrial load-center distribution systems.

Secondary Network

The third basic load-center system circuit arrangement is the secondary network (Fig. 3) which is used in only 1% to 2% of industrial distribution systems due to its higher cost. However, it does have certain advantages which could justify the larger investment.

This system differs from all others in that all substation transformers are operated in parallel and, in the event of a primary feeder or transformer fault, automatically switches

off the faulty circuit. This system has the main advantage of allowing large load shifts between substations without appreciably increasing the load on any one transformer.

Primary Selective System

The primary selective system (Fig. 4), fourth basic arrangement, differs from the other three in that two primary feeders are brought to each substation. This system provides service to the load-center substations in event of a primary cable failure. Its use may be desirable where load centers are widely dispersed and primary cables are located in areas where they are subject to damage.

Basic component of the load-center system with secondary voltages 600 volts and below is the load center unit substation. A load center substation consists of incoming line, transformer and secondary distribution feeder sections.

The incoming line section may be metal-clad drawout switchgear, a fused on unfused magnetizing current (Mag-I) or load break switch, an oil cutout or a junction box. The transformer may be oil-filled, non-inflammable liquid-filled, ventilated dry type or sealed dry type. The secondary distribution section is normally metal-enclosed drawout switchgear with large air circuit breakers.

Selection of load-center switchgear must be co-ordinated with the primary feeder system and the secondary feeder circuits to insure application of breakers with adequate interrupting and continuous current ratings. After the correct breakers are chosen, the number of feeder breakers are selected on the basis of load requirements.

Transformer secondary or main breakers are often used for feeder back-up protection, for quick de-energization of all feeders in case of emergency, and for future expansion to transform a radial to a secondary selective system. In some cases, large air circuit breakers are used for motor starting if the starting duty is not repetitive.

Regardless of the load-center circuit arrangement, metal-clad drawout switchgear provides the vital link between the power source and the load-centers. In every primary circuit arrangement it provides short-circuit and overload protection to the primary feeder cables and the load-center transformers.

The basic industrial bus arrangement consists of one source breaker and two or more feeder breakers (Fig. 5).

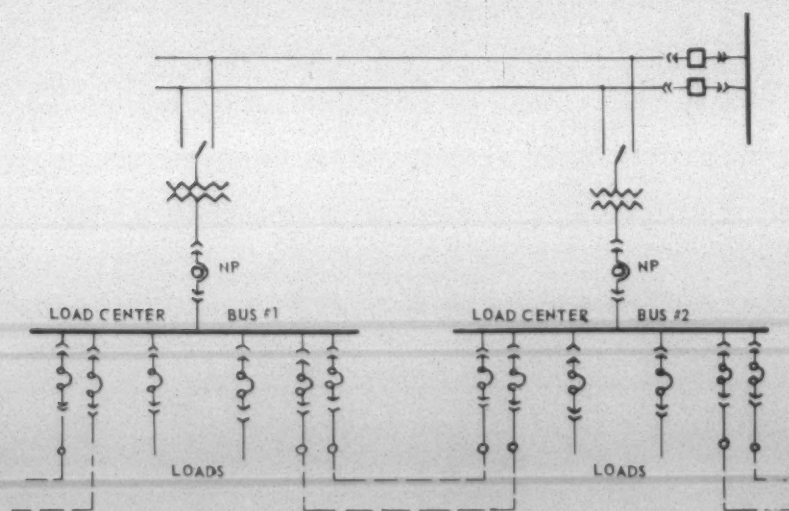


Fig. 3 - Secondary network scheme.

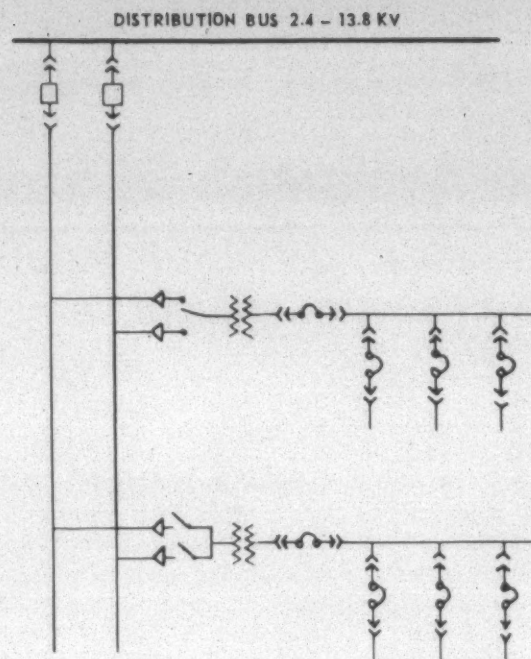


Fig. 4 - Primary selective system.

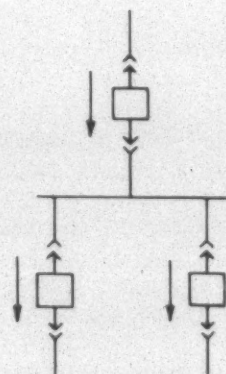


Fig. 5 - Basic industrial bus arrangement.

Any other arrangement is used mainly to improve service reliability to all or part of the load during scheduled outages or in the event of source or equipment failure.

A common variation of the basic primary bus arrangement is the two source sectionalized-bus (Fig. 6). Here the bus tie is operated normally open and each source breaker supplies one-half of the bus. If one source fails or is shut down for maintenance, the source breaker is opened, the tie breaker closed allowing the other source to supply all of the bus. This arrangement is similar to the secondary selective system and is simple, safe and easy to operate.

An example of how to determine the magnitude of shortcircuits is to be found in the single line diagram of a radial distribution system from the source to the load side of a feeder in the load-center unit substation (Fig. 7).

In this instance, the power company

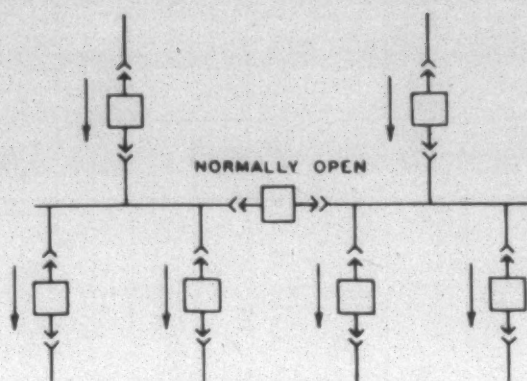


Fig. 6 - Two-source sectionalized bus.

calculated the available shortcircuit at the point of entrance to the industrial plant as 100,000 kva. This figure was arrived at by calculating the fault currents available from all of the power company's rotating machines, generators and synchronous condensers, and reducing this current in proportion to the amount of impedance between the generators and the industrial plant.

With the interrupting capacity of breakers A, B and C determined, the proper breaker rating—4,160 volts with a 150,000 kva, interrupting capacity—is selected from Table I. This breaker will give some reserve capacity in the event the utility's available short-circuit should increase with the addition of a new generator or if large synchronous motors are added to the plant's distribution system.

To determine available short-circuit on the 480-volt bus, neglect the impedance of the primary cable. By omitting the cable impedance, the available short-circuit at the primary of the 1,000-kva transformer is 100,000 kva.

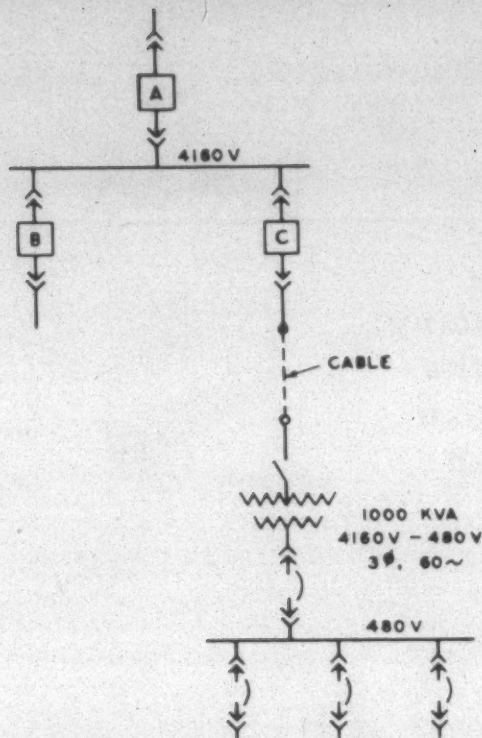


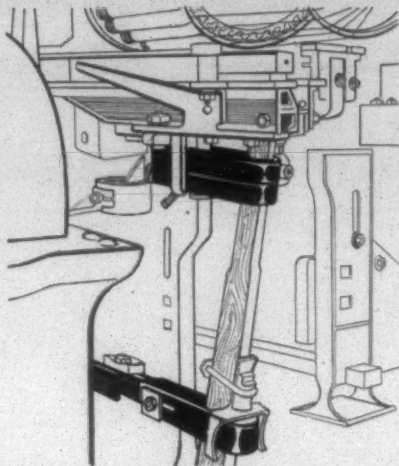
Fig. 7 - Radial distribution system from source to load side of feeder in load-center substation.

According to Table II, the short-circuit on the 480-volt bus is 22,400 amperes if no motors are connected to the bus. Motors contribute short-circuit current for a brief period. If it is assumed that there is a 1,000-kva motor load connected to the 480-volt bus, the actual short-circuit cur-

Item	Interrupting Rating in Mva	Rating in Kv	Minimum Operating KV at Rated Mva	Continuous Current Rating in Amperes At 60 Cycles	Withstand Test KV		Momentary Rating in RMS Total Amperes	Interrupting Ratings in RMS Total Amperes For 60-cycle Systems	
					At 60 Cycles (RMS)	Impulse (Crest Value)		At Rated Voltage	Maximum
1	75	4.16	3.5	1200	19	60	20000	10400	12500
2	150	4.16	3.5	600	19	60	40000	21000	25000
3	150	4.16	3.5	1200	19	60	40000	21000	25000
4	150	4.16	3.5	2000	19	60	40000	21000	25000
5	250	4.16	3.85	1200	19	60	60000	35000	37500
6	250	4.16	3.85	2000	19	60	60000	35000	37500
7	350	4.16	4	1200	19	60	80000	48600	50000
8	350	4.16	4	3000	19	60	80000	48600	50000
9	250	7.2	4.6	1200	36	95	51000	20000	32000
10	250	7.2	4.6	2000	36	95	51000	20000	32000
11	500	7.2	6.6	1200	36	95	70000	40000	44000
12	500	7.2	6.6	2000	36	95	70000	40000	44000
13	150	13.8	6.6	600	36	95	20000	6300	13000
14	150	13.8	6.6	1200	36	95	20000	6300	13000
15	250	13.8	6.6	1200	36	95	35000	10600	22000
16	250	13.8	6.6	2000	36	95	35000	10600	22000
17	500	13.8	11.5	1200	36	95	40000	21000	25000
18	500	13.8	11.5	2000	36	95	40000	21000	25000
19	500	13.8	11.5	1200	36	95	60000	21000	25000
20	500	13.8	11.5	2000	36	95	60000	21000	25000
21	750	13.8	11.5	1200	36	95	60000	31500	37500
22	750	13.8	11.5	2000	36	95	60000	31500	37500
23	750	13.8	11.5	1200	36	95	80000	31500	37500
24	750	13.8	11.5	2000	36	95	80000	31500	37500
25	1000	13.8	11.5	1200 3000	36	95	80000	42000	50000

Table I—Ratings for metal-clad equipment with oilless power circuit breakers.

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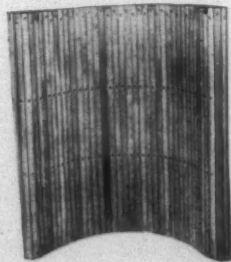
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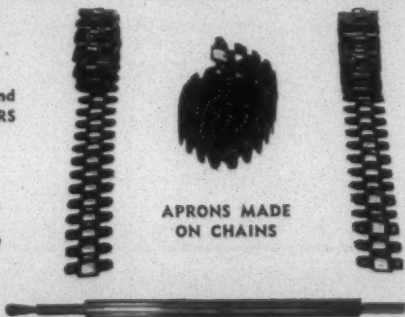
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Transformer Rating 3 or 4 KVA & % IZ	Max. Short Circuit KVA Available Primary System	Normal Load Continuous Amp.	Transformer Alone	100% Motor Load	Combined	Recommended AC Breaker Type LA (See Table 1 for trip coil ratings)			
						M	F	C	S
300 4.5%	50,000	361	8900	1800	10700	25	15	15	15
	100,000		9400		11200				
	150,000		9600		11400				
	250,000		9800		11600				
	500,000		9900		11700				
500 4.5%	Unlimited		10000		11800				
	50,000	601	13700	3000	16700	50	15	15	25
	100,000		15100		18100				
	150,000		15600		18600				
	250,000		16000		19000				
	500,000		16400		19400				
750 5.75%	Unlimited		16800		19800				
	50,000	902	15500	4500	20000	50	15	15	25
	100,000		17300		21800				
	150,000		18100		22600				
	250,000		18700		23200				
	500,000		19200		23700				
1000 5.75%	Unlimited		19600		24100				
	50,000	1203	19500	6000	25500	50	25	15	50
	100,000		22400		28400				
	150,000		23500		29500				
	250,000		24500		30500				
	500,000		25300		31300				
1500 5.75%	Unlimited		26200		32200				
	50,000	1804	25800	9000	34800	75	50	15	50
	100,000		31200		40200				
	150,000		33500		42500				
	250,000		35600		44600				
	500,000		37300		46300				
2000 5.75%	Unlimited		39400		48400				
	50,000	2406	30900	12000	42900	75	50	25	75
	100,000		38200		50200				
	150,000		42600		54600				
	250,000		45900		57900				
	500,000		48700		60700				
	Unlimited		52400		64400				

Table 2—480 Volts.

rent available is 28,400 amperes. Therefore, the secondary breakers should have a minimum short circuit capacity of 28,400 amperes at 480 volts.

It is never wise to select the rating of a circuit breaker without knowing all the effects concerning future expansion of the mill and future plans of the utility. Often plant distribution systems have grown to a point where the circuit protective devices become inadequate and unsafe.

November Cotton Consumption Down

Consumption of all cotton in the U. S. in November 1959 totalled 725,482 bales as compared with 732,245 bales in October and 671,591 bales in November 1958, according to figures given by the Bureau of Census. The daily average consumption in the U. S. in November was 36,274 bales as compared with 36,612 bales in October and 33,580 in the previous November.

Foreign cotton consumption in November totalled 8,258 bales against 8,566 bales in October and 6,892 bales in November 1958.

Some 39,034,000 pounds of man-made fiber staple was consumed in the U. S. in November as compared with 39,197,000 pounds in October and 40,968,000 pounds in the previous November.

At the end of November 1959, 20,317,000 cotton-system spindles were in place with 19,308,000 active. This compares with 20,269,000 in place and 19,273,000 active in October and 20,713,000 in place and 19,276,000 active in November 1958.

The spindles were operated a total of 9,880 million hours in November against 9,970 million hours in October and 9,162 million hours in the previous November.

The Loomfixer And His Job

Part Fifteen

A PROPERLY MAINTAINED PROTECTOR MOTION WILL HELP INSURE EFFICIENT LOOM PERFORMANCE

THERE are two reasons the loom protector motion should be kept in good condition. First, the protector motion stops the loom when the shuttle fails to enter the box for any reason and protects the warp yarn and the loom from damage. Second, the protector motion ties in so closely with the shuttle boxing mechanism that any defective setting or poor performance of the protector motion will be reflected in improper boxing of the shuttle.

Inspect the protector motion periodically, preferably at warp-out. Check the protector rod for play in the bearings. The rod should be tight without binding. A worn bearing or rod should be replaced but if there is only slight lost motion it can be remedied by removing the bearing cap and filing it.

The rod should have no lost motion lengthwise. This slackness can be taken out by loosening the connection and bringing the ends of the two sections of rod closer together. Check the daggers. If they are worn or chipped they should be replaced. The same rule applies to the frog piece, or steel. When a new rod is put in, check the connection. See that the setscrews have sharp points and that two screws hold each section of rod.

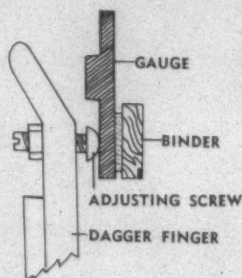
No set rule can be laid down for adjusting the tension of the protector rod spring. The spring should be tight enough to hold the dagger finger firmly against the binder but not strong enough to retard the normal boxing and picking of the shuttle.

If there is not enough tension on the spring the dagger may jump across the steel even though the shuttle is not fully boxed. Too much tension will cause uneven pickage of the shuttle, will require more power for the picking motion, and will cause undue wear to the protector motion, the shuttle, boxes, binders, and picking motion parts.

Use the shuttle gauge to set the protector rod fingers. Remove the shuttle from the box and pull the lay forward until the dagger rests on the top edge of the frog steel.

Adjustment is made on older looms by loosening the setscrews and moving the dagger on the rod. On newer looms the setting is made by moving an adjusting screw in the finger.

Set the dagger so that there is $\frac{3}{16}$ -inch clearance between the dagger finger and the binder. Set the dagger stop tight



The shuttle box gauge can be used to set the dagger finger in relation to the binder.

enough to keep the dagger from bouncing but not tight enough to bind. Keep a good resilient leather bumper behind the stop.

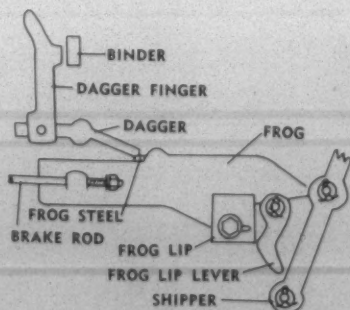
Check the frogs to see that they have good bumpers or springs. Set the frog lip so that it will trip the knock-off lever and quickly stop the loom when the dagger contacts the frog steel.

To test the knock-off, remove the shuttle from the box and, with the motor stopped and shipper handle on, pull the lay forward. If the protector motion is effective the shipper handle will be disengaged when the dagger strikes the steel.

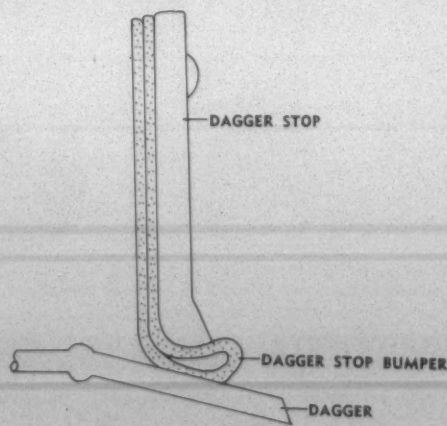
If the brake rod is connected to the frog, see that it pulls the shoe against the brake wheel when the shipper is disengaged. The brake helps cushion the shock of the sudden stop but it will be too late to be effective if applied in the usual way and with pressure from the brake lever spring only.

Keep the protector rod bearings well lubricated. The center bearing is best lubricated when the warp is changed. Do not over lubricate the center bearing because excess oil or grease will drop onto the cloth.

Proper maintenance of the protector motion can do much to insure a smooth-running efficient loom and keep the cost of repairs and parts to a minimum.



The protector motion is linked with the shuttle boxing motion, the brake and the shipper motion.



The dagger stop should be checked whenever the dagger finger or shuttle box is adjusted.

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Spinning, Spooling And Warping

One of the features of last Fall's meeting of the Northern North Carolina-Virginia Division of the Southern Textile Association was a group discussion on spinning, spooling and warping led by James McCutchen of Erlanger Mills, Lexington, N. C. The following is a transcript of that discussion.

Question: At what speeds do you spool your yarns?

Answer: We are running our spooler at 1,095 on 30s.

Answer: Ours run around 1,100.

Answer: We tried running 2¼-inch rings on 22s with a nine-inch stroke, filling wind. We could not get it to run successfully on spoolers. We had too many sluffs. Spoolers were running 1,200 yards per minute.

Question: Has anybody had any experience with this new Piedmont cam?

Answer: We have a sample spinning frame with the Piedmont and have found that it does spool off successfully. We are spooling off 26s at 1,300 yards per minute. We are getting nine ounces on the bobbin with the same ring size and stroke which gets only six ounces on the bobbin with combination wind. With the combination cam you have got to build more of a straight taper instead of using a cop.

Question: What is the normal spooling speed for 40s combed yarn?

Answer: We run 30s at 1,200 yards per minute and our 20s at 1,000 yards per minute.

Answer: We run 1,100 on 40s.

Answer: Isn't it true that up around 30s and over you can run spoolers without too many problems? It's when you get down around 24s and 20s that you start running into problems. You have to cut your speed in relation to the coarseness of the number.

Question: What type spooler are you fellows talking about running those speeds on?

Answer: Barber-Colman Type C.

Question: Is anyone shipping spooler packages to the knitters?

Answer: Yes. We use a Barber-Colman Type DD spooler which makes up to a 6¼-pound package. We ship the package directly to our knitter customers. The package has a four-degree taper.

Question: What front roll speed is best for running 28.5s warp yarn?

Question: What twist multiplier?

Answer: 4.60.

Question: What ring size and traverse?

Answer: 2½-inch and 7½ to 8-inch.

Answer: The front roll speed of a spinning frame is only relative. The traveler is the controlling agent and that

is dependent on the strength of the fibers. One mill can run 140; another can only run 115 r.p.m. with the same ends-down. The potential breaking strength in good cotton fibers is well over the strength of a similar bulk of steel. But you have got to have the fibers there and you have got to have the staple length to get that good breaking strength. That determines your traveler speed which determines your front roll speed. The front roll speed is just relative.

Answer: That's true. The only other determining factor would be whether you have a good ring or not.

Answer: Well, that's true. I was assuming your rings were in good condition.

Answer: I'd like to get into the matter of rings in a minute or two. So with that in mind, what speeds are some of you getting running about 28s yarn?

Question: Carded or combed?

Answer: Carded.

Answer: With a good ring we get 5,800 f.p.m.

Answer: Our best speed is 117 r.p.m. using 2½-inch rings.

Answer: I know a group of mills that can run that number 145-150 r.p.m. The difference is the kind of cotton.

Answer: I was in a mill the other day running 30s with a 9-inch stroke with 1⅞-inch ring running 150 r.p.m. of the front roll. They were using strict low middling cotton. The twist multiple was 4.20.

Answer: We run 26s at 165 r.p.m.

Answer: We are running 40s warp at 132 r.p.m. The twist multiple is 4.35.

Answer: (Machinery representative) We have an evaluation Whitin Piedmont frame in a mill running 150 r.p.m. on 26s combed yarn. The twist multiple is 4.50 and the traveler speed is 7,200 feet per minute. Ends-down have been less than four per thousand spindle hours. I am going to set the traveler speed up to 7,500 to see where the end breaks go. This is just on one frame but it is representative. The way we evaluate the frame is by the potential strength in the cotton being spun. If the break factor is 2,600 we know just about what the spindle speed can be. If the break factor goes to 2,900 we set the spindle speed up.

Answer: There has been an approach made in recent years to rings and travelers that has been good. The Klutz ring has a good finish. It allows the frame to be run at a higher speed because of lowering friction. Another company, Whitinsville Spinning Ring Co., has got the Anti-Wedge ring with its difference in contour. It allows the yarn to go through the ring with less friction. It calls for a different type of traveler. Our company has come up with the Kryton ring which is different in the contour also. I think any of the rings on the market that have that approach to the contour and to friction and everything are good rings and allow you to run much higher speeds. It may not work that way in every mill but most of the mills have had it to work out that way.

Question: How much increase can you get—10%? 15%?

Answer: I had rather say 10%. Most of the information

I have read says 10% increases are possible. I think it is nearer right.

Answer: I think so, too. The ring alone is not going to solve all the problems. In regards to flange, I think the tendency is toward a No. 1 flange on down to a coarser yarn.

Answer: The elliptic traveler is of more advantage at higher speeds than at lower speeds.

Question: Then it is possible that you might have fewer ends-down when running a certain count at 6,000 spindle speed than at 5,000?

Answer: Yes, that is true.

Answer: The only use for which we ever recommended elliptic travelers, until these high speeds came up, was on a worn out ring. We used to leave the travelers on the soft side. We have had to harden up on them now.

Answer: We can cite this instance. Riverside Division of Dan River Mills went to an elliptic ring and used the high gravity center traveler on there. The first thing they knew the rings were wearing out. The travelers were backtracking leaning over the outside flange. We went back and replaced the rings using elliptic travelers. The elliptic traveler contacts the ring on the inside. You can stick a piece of paper on the outside and have no contact whatsoever. After breaking the rings in they set their job loads up on 26s yarn. They had only 10 ends-down.

Answer: The biggest trouble we have with elliptic travelers is loading. We can't keep them from loading.

Statement: I know one mill that has a problem I wish I had. They are debating on whether or not to do away with their second and third shift section men—they have one on each shift for a 34,000-spindle mill—or to do away with their spinners. They have two spinners per shift.

Statement: One thing that will contribute to higher speeds and fewer ends-down is control of your thread from the steel roll to the traveler. Saco-Lowell calls it the node ring. I would like to know if anybody has had any success with a control ring other than the Saco-Lowell Gwaltney?

Manufacturer's Representative: We have a Whitin Piedmont frame in a room with about 25 Saco-Lowell Gwaltney frames. We are running 25 r.p.m. higher than the Gwaltney. It has the latest in what they call the node control ring.

Answer: The reason I asked about that is we have 24 frames bought in 1946 when they came out with the node control ring. The sample frame we had worked very well. The frame ran at top speed. We had 100-150 better breaking strength in the yarns. We put in the 24 frames and after four or five months had to take off the control rings. The company that furnished the rings has not yet supplied us with one that is satisfactory.

Question: Is anybody putting any type of chemical additive in the cotton in the opening room to get these good ends-down figures?

Answer: We use a spray and if we take it out our ends-down go up.

Question: What is that due to?

Answer: Without the spray we have excessive fly conditions.

Answer: We have tried several different brands of spray and have not been able to tell any difference in break or ends-down.

Question: What about the several different brands versus no spray at all?

Answer: We can't see a difference in breaking strength

but can see a difference in the amount of fly in the room.

Question: What operation do you spray?

Answer: We spray in the picker. We have used oil and chemicals.

Spooling

Question: What kind of spooler maintenance program do you have?

Answer: As far as the knotter is concerned, we clean it during the week.

Question: Do you have a good bit of work for the maintenance man to do after completing the regular operating schedule?

Answer: We do not.

Answer: We have some work done every week. We follow the recommendations given by the Barber-Colman Co.

Question: How many man-hours each week-end does this take and how many spindles do you have?

Answer: We have 234 spindles and the work averages taking about eight hours per week. This is done after the regular schedule is completed.

Question: All our maintenance is done through the week. We go through the machine very thoroughly once or twice during the year.

Statement: I think one of the most important things about a spooler is the snick plates. We try to have each section man take off and clean three snick plates. We put on cleaned and adjusted snick plates. That way we get around in about 30 days. We have 334 spindles. We don't change our knotter on any scheduled time. The knotter is checked every day to see if it's tying the proper knots. We put on a spare knotter and repair the one that is tying the defective knots.

Statement: It seems the general consensus is that very little maintenance is done on the week-end.

Question: What kind of cleaning schedule do you have during the course of the regular shift and how do you pay the personnel operating the spooler?

Answer: Our spoolers are stopped, cleaned, blown-off every four hours. We close down and give the operators a 20-minute break. The machines are blown off, the brushes on the traverses are cleaned, the knotter is blown off thoroughly. The operators are paid by the hour, not piecework.

Question: Has anyone had any experience changing over a Barber-Colman Type A to a Type C?

Question: How do you do that?

Answer: Well, you change from revolving the cheese in the creel to pulling it over the end. The package is the same size.

Question: Do you mean running the A Type spooler package into the C Type creel?

Answer: Yes. You have to buy a new warper, a regular CW warper. You take your cheese and spindle and all that and put a regular C type core, not quite as long, and then buy the right width sleeve to put on there. The only difference would be the A Type package.

Question: You'd never get as many cheese on there, would you?

Answer: Well, actually you have a little more room.

Question: How are warper tenders and creeler hands paid?

Answer: By the hour.

Answer: By the beam.

Answer: We pay creelers by the number of cheese creeled. We pay warper tenders by the number of linear yards run taking into consideration the number of ends per beam. We watch the warper stops closely and if they get out of line we change the rate. That is the only thing you can do.

Question: Do you have a stop counter on the warper?

Answer: Yes, we do. We have the new Barber-Colman warper which makes a 39,000-yard ball warp.

Question: How many warpers does an operator usually take care of?

Answer: As a rule, in our mill the tender takes care of two warpers. This depends on the yarn size and so forth.

Answer: We have one man on four warpers. The speed is 500 yards per minute.

Question: Does anyone have a knotter counter on the spooler?

Answer: Yes, we have one. Each girl is paid by the number of bobbins she puts in and the number of cheese that are doffed. We pay both by the knot and the cheese.

Question: How is it that you don't pay just by the cheese?

Answer: We consider the re-ties, number of bobbins per cheese and number of cheese doffed. You may normally have nine bobbins per cheese but you may have to thread 13 bobbins in the pocket to get the full cheese. So we consider all that. We correlate all this information.

Question: Where should the ring rail be when you stop a spinning frame to doff it for best results on the spooler?

We have warp wind.

Answer: We always try to catch the rail coming up.

Answer: I think it is a practice in all types of bobbin builds, whether you doff on the upstroke or on the downstroke, to start pulling the rail down so you can get a wrap or two around the butt before the bobbin stops.

Answer: I think the answer is that it doesn't make any difference whether the rail is going up or down. But the rail should be pulled down at a point so when the spooler tender takes the tail off and puts it in the thread clamps, the yarn is wound at a position about the top of the taper. Close but not too close to the nose.

Question: Has anyone had any experience with the doffer truck being rolled into the spooler replacing the conventional trough on the spooler?

Answer: I have seen a lot of them in operation and the mills like the system.

Answer: It saves a lot of labor.

Question: Would it be practical if you are running 30 or 40 different yarn numbers?

Answer: I was in a mill last week that is doing it. This particular mill doffs in the doff box and rolls the box to the spooler. There is a platform built four inches off the floor and the doff box is pushed from the truck onto the spooler. They use a spring bottom doff truck. The spooler tenders like it better because the yarn stays at the same level all the time. The system saves one handling process and eliminates the labor involved in pouring the yarn into the trough.

Increased Automation For The Textile Industry?

FOSTER MACHINE CO. TO HANDLE U. S. TEXTILE SALES
FOR LINDLY CO.'S AUTOMATIC CONTROL DEVICES

THE January announcement that Foster Machine Co. will handle all U. S. textile sales for Lindly & Co. Inc., Mineola, L. I., is expected to give great impetus both to the development and adoption of Lindly automatic control and detection devices by the industry.

Founded in 1947, Lindly & Co. has made substantial contributions toward the automation of textile processes. Lindly electronic devices now in service include the Lindly Automatic Yarn Inspector; the Electrotense for tensioning yarn; the Photo-Scanner for use on tricot knitting machines; the Dyna-Micro-Gage for monitoring spun yarn counts and filament yarn deniers; the Spun Yarn and Tire Cord Inspector, Integrator Type, a complex variation of the regular Yarn Inspector; a Thread and Line Inspector; the Automatic End-Break Detector; the Lind-Recorder for both recording and timing applications; the Photoelectric Seam Detector; an automatic Yarn Defect Analyzer; and others. (These products are described and illustrated on Pages 44-45 of this issue.)

At the present time there are about 1,000 Lindly units of one kind or another in operation in this country and abroad. The majority of the company's pilot models were practically tailored to satisfy requirements of individual tex-

tile customers in this country while many of the actual production units were seized upon by European mills eager to explore the new technology. With Foster taking over sales, Lindly expects interest among American mill men to soon outstrip that of the European industry in adoption of automatic electronic controls.

Commenting on the growth of his firm in the textile field, Howard Lindemann, Lindly's president, points out, "When we introduced our first electronic devices to the textile industry, many mill people did not understand this type of equipment and feared excessive maintenance problems. We sincerely feel that Lindly has been instrumental in breaking down this erroneous notion. With over a thousand different items of equipment in use, we do not average more than one service call every two weeks for all of these installations—including the small as well as the large installations." He predicts that in perhaps five years or so electronic engineers and technicians will be as well accepted, although not as numerous, as mechanical engineers and machine fixers.

A pioneer in winding techniques and mechanisms, Foster maintains headquarters in Westfield, Mass. Its Southern sales office, headed by Ernest P. Dodge, is in the Johnston Building, Charlotte, N. C.





T. G. Rayfield, Overseer of Spinning at White Horse Mills, Greenville, S. C., discusses spinning characteristics of Accotex cot with Armstrong representative Walter T. Coker.

Get maximum production of top-quality yarn with Armstrong Accotex Cots

The right spinning cot can help you get the most out of high-draft spinning frames. But selecting the right cot may be difficult, because cot performance can vary with the frame and with the fiber.

In such cases, many mill men find that the specialized training and experience of their Armstrong man can be helpful. He can make dependable, unbiased suggestions because the broad Accotex line includes materials engineered to meet every spinning requirement.

Where front roll lap-ups are increasing, one of the new anti-static Accotex materials may be what you need. Or if eyebrowing is a problem on roving and spinning frames, a switch to Accotex NC-762 will help to eliminate it.

On some frames, a softer cot material often improves break strength and reduces yarn irregularities. New soft Accotex compounds are available for this service.

With any fiber or blend . . . on any frame . . . the right Accotex cot will help you spin top-quality yarn. Call your Armstrong man for details—or write to Armstrong Cork Company, Industrial Division, 6502 Davis Avenue, Lancaster, Pennsylvania.

Armstrong ACCOTEX COTS

1860-1960 Beginning our second century of progress

Auburn Boasts New Processing Lab

THE LAB IS A JOINT PROJECT OF AUBURN
AND THE ALABAMA TEXTILE EDUCATION FOUNDATION

ITS name isn't all that's new at Auburn University (which ceased to be Alabama Polytechnic Institute January 1). The school of textile technology is sporting a new processing laboratory, a first rate facility equipped with carding, drawing, roving and spinning machinery. The lab is a joint project of the Alabama Textile Education Foundation and Auburn's engineering experiment station, and is being manned by W. T. Waters, associate professor in charge of textile research, and Joe Phillips, senior textile engineer.

The laboratory will be used to conduct applied research for the benefit of the textile industry in Alabama. Eventually the lab will get into basic research with both cotton and man-made fibers.

Two projects now underway at the lab deal with the evaluation of cotton varieties grown in Alabama. One is called "Cotton Fiber Properties and Product Quality," and is being done for and in conjunction with the engineering experiment station. The project has two phases. The first will be to provide information on fiber properties, processing and yarn quality to be expected from the 1959 Alabama cotton crop. Varieties to be evaluated include Coker 100, Empire, Plains, Auburn 56, Dixie King and Deltapine 15. Fiber tests will include: (1) tensile strength and elongation; (2) length and uniformity; (3) fineness and maturity; (4) non-lint (trash) content; and (5) probable damage from cavitoma.

Evaluation of processing performances of the varieties to be tested will consist of: (1) nep count at the card; (2) evenness of sliver, roving and yarn; (3) ends-down in spinning (using U.S.D.A. accelerated test); (4) yarn strength and elongation; and (5) yarn grade and appearance.

The lab's second current project, identified as "Investigations Designed to Determine the Effect of Selected Fiber



William T. Waters is the associate professor in charge of textile research at Auburn's new processing research laboratory.

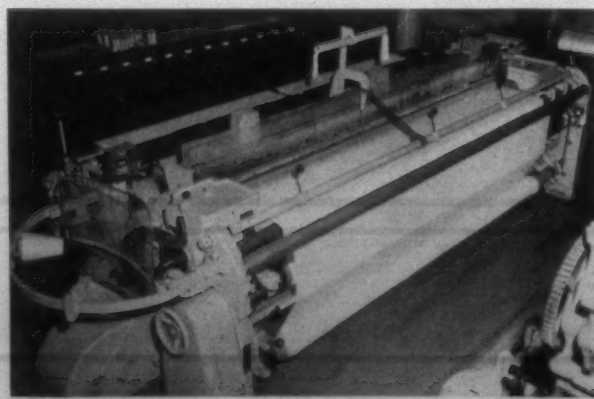
Properties and Processing Variables on End Breakage During the Spinning of Cotton Yarns," is being done for the U.S.D.A. It involves a systematic study of blends containing varying amounts of cotton with dissimilar fiber characteristics in medium and fine count carded yarns. Blends will be studied with particular attention to grade, staple length, fineness and strength. Blend trials will be statistically designed and evaluated and will consist of blends of 0, 25, 50, 75 and 100% between the two extreme fiber properties being investigated.

The purpose of the U.S.D.A. project, as its title suggests, is to determine the effect of selected fiber properties—spinning tension, spinning draft and yarn twists—on end breakage rate during spinning. The factors are to be ranked in the order of their importance for use in predicting end breakage rate.

Cottons to be used in the project are supplied by the U.S.D.A. and will be blended to give variations at two levels for (1) coarse mature fibers; (2) fine immature fibers; (3) unusually weak fibers; (4) unusually strong fibers; and (5) microbically damaged fibers. Each of the blends and a control cotton will be spun at two levels each



Equipment installed at the facility includes a card, drawing, roving and spinning frames. The temperature and relative humidity in the area is carefully controlled to standard conditions.



Other newly installed equipment at the school includes two Warner Swazey weaving machines. This unit is running wide sheeting. The other loom is having a Staubli dobby head installed on it.

of spinning tension, spinning draft and yarn twist.

Blends will be made in either raw stock or lap form. End breakage rate will be determined by U.S.D.A. accelerated test. All broken ends will be examined to determine the reason for the breakage. The broken end examination will include: (1) microscopical techniques (where immature fibers have been introduced) to identify immature fibers and determine whether immaturity is the major contributing cause to the end breakage; (2) length array analysis (where the blend includes short fibers) to determine whether the percentage of short fibers is greater at the point of break than at other points on the yarn; and (3) standard identification techniques (where fibers damaged by micro-organisms are included in the blend). Statistical techniques will be used to determine whether the breaks were caused by the introduction of cottons of different properties, occurred as a matter of chance, or were due to other causes.

Other New Equipment

Other newly installed equipment at the textile school includes an Instron tensile testing machine and two Warner-Swasey weaving machines. One of the weaving machines is in operation on wide sheeting. The other is being fitted with a Staubli dobby head.

Hamburger Discusses Wash-And-Wear



Hamburger

Wash-and-wear will not be perfected until some of its fundamentals are more thoroughly understood, Dr. Walter J. Hamburger, director of Fabric Research Laboratories Inc., Dedham, Mass., told members of the American Association for Textile Technology at their January 6 meeting held at the Hotel Vanderbilt, New York City.

Great developments frequently come into being by what might be called a "planned accident," with varying degrees of dependency upon scientific principles, Dr. Hamburger stated. But he added that few of these are perfected or refined without a fundamental understanding of their behavior.

Wash-and-wear is presently at a stage of development where major improvements are forbidden or at least considerably delayed because of a lack of fundamental information, according to Dr. Hamburger. "We can expect only marginal improvements from the current, essentially trial-and-error approach to perfecting wash-and-wear. Until we have obtained answers to a good many why's relative to wash-and-wear it will be only with exceedingly good luck that we achieve perfection in the product," he said.

U.S.D.A. Develops Carding Cleaner

U. S. Department of Agriculture engineers report that they have developed a new carding cleaner machine which has a high capability for cleaning ginned cotton. In pilot tests, the unit has removed an average of one-half of the trash remaining in the cotton after preliminary opening and cleaning in the mill. Called the SRRL Carding Cleaner, the unit was developed by Agricultural Research Service engineers under the direction of R. A. Rusca. George J. Kyame and William A. Latour of the A.R.S. Southern Utilization Research and Development Division at New Orleans, La. A completely redesigned finishing section of

a standard one-process textile picker, the unit is said to have resulted in a four-fold increase in picker cleaning efficiency.

In addition to increased cleaning, the carding cleaner reduces lint loss to about one-third of that resulting from use of standard pickers. The reduction in lint loss is effected by a lint-recovery system in the trash box that sucks free lint into a tube and puts the lint back into the processing line. Laps produced by the new unit are said to have a more even texture and to be better felted than those from standard pickers.

Details of the SRRL Carding Cleaner are now available to industry, and non-exclusive licenses to manufacture the unit in the U. S. on a royalty-free basis can be obtained from the Secretary of Agriculture.

Cotton Fabric Production Drops

Cotton broad woven fabric production in the third quarter of 1959 was approximately 1% below the previous quarter but 13% above the third quarter 1958 level, according to the Bureau of Census.

Production of sheeting and allied coarse and medium yarn fabrics was 1% above the previous quarter's level. Print cloth yarn fabric output was approximately at the previous quarter's level, while the production of all other fabric classes declined 1 to 5% from the previous quarter. However, all fabric classes showed increases of 7 to 21% compared to the third quarter 1958.

SUMMARY OF PRODUCTION BY CLASS OF FABRIC
(Thousands of linear yards)

Type of Goods	July- Sept. 1959 (preliminary)	April- June 1959	July- Sept. 1958
Cotton broad woven goods, total	2,363,080	2,389,999	2,098,982
Duck and allied fabrics	53,829	54,528	48,154
Sheeting and allied coarse and medium yarn fabrics	948,862	943,489	936,559
Print cloth yarn fabrics	831,736	830,882	779,460
Colored yarn fabrics	125,144	131,535	113,298
Towels, toweling, and dishcloths	138,398	140,689	126,945
Napped fabrics, blankets and blanketing	50,775	52,869	44,753
Fine cotton fabrics	388,423	406,780	338,420
Other woven cotton fabrics and specialties	125,913	129,227	111,383

Ruffin Stresses Importance Of Education

Wm. H. Ruffin, president of Erwin Mills, Durham, N. C., and a past president of the National Association of Manufacturers, has urged increased giving on the part of industry to the cause of education. "This country is waking up to its responsibility to education, not fast enough—but it is becoming more conscious of the needs of education and to the absolute necessity of meeting them," Ruffin said. Commenting upon the importance of education in industrial development, he called for well-rounded curricula, the inclusion of more courses in the liberal arts for the student seeking scientific degrees. "Only such a combination gives us the well-rounded citizens that industry must have today as its leaders." His remarks were made in a recent speech to the trustees, alumni and faculty of Wingate (N. C.) College.

Ruffin decried any attempt on the part of education in this country to match the Russian concept. "They merely seek," he said, "to develop national manpower with unquestioning obedience and technological specialization in the service of the State. That is quite different from the American concept of the purpose of education, i.e., the development of each individual's capacity to think for himself. We should shun totalitarian practices in education, or



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Send for complete information covering design and operation of the new models ACM-903 and 904 Ajusto-Spede Drives. Read how the new K-2 Control provides infinite speed adjustment, on-off clutch control, constant speed control, jogging, threading, cascading, and acceleration control.

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at least carefully examine each one for fear we may end up undermining the traditional American way of life."

A.T.M.A. Plans Annual Meet

The American Textile Machinery Association will hold its 27th annual luncheon meeting February 2 at The Algonquin Club, Boston, Mass. William K. Child, president of A.T.M.A. and vice-president of Draper Corp., Hopedale, Mass., said that the program will center around discussions of various aspects of foreign trade.

Principal speaker at the luncheon session will be Hawthorne Arey, a member of the board of directors of the Export-Import Bank of Washington. Arey, who formerly practiced law in Omaha, Neb., became secretary and counsel of the Export-Import Bank in 1938. He has served continuously since that time with the bank, his positions including that of a member of the board of trustees, and as executive vice-president. He served as vice-chairman of the board of directors from 1949-1953. His address will cover various phases of financing foreign trade.

The A.T.M.A. agenda will include, also, reports on plans for the American Textile Machinery Exhibition-International to be held in Atlantic City, May 23-27, and other association activities.

A.S.Q.C. Plans Conference

The textile division of the American Society for Quality Control will present a conference on the Scientific Control of Quality in the Textile Industry February 18-19 at the Clemson House, Clemson, S. C. The conference will be held in co-operation with the National Association of Shirt, Pajama and Sportswear Manufacturers and the Southern Garment Manufacturers Association.

The program features three simultaneous sessions for each scheduled hour of the day. The program for Thursday morning, February 18, is as follows: 9 a.m.—"Organizing for Quality" by W. J. Clements Jr., Dan River Mills, Danville, Va.; "Variations Flow Analysis" by N. L. Enrich, Institute of Textile Technology, Charlottesville, Va.; and "Basic Measurements-Variables" by D. S. Chambers, University of Tennessee. 10 a.m.—"Tex Universal Numbering System" by B. L. Whittier, North Carolina State College, Raleigh; "Analysis of Variations of Spun Yarn Properties" by D. S. Hamby, North Carolina State College. 10:30 a.m.—"Control Charts" by J. H. Reynolds, Celanese Corp., Rome, Ga.; 11 a.m.—"Quality Control Education in School and Industry" by D. S. Hamby, North Carolina State College; "Measuring the Dollar Value of Quality Control" by P. Felker, William Carter Co., Barnsville, Ga.

The Thursday afternoon program will be: 2 p.m.—"Fabric Imperfections Manual," a panel discussion with G. T. Gardner, Riegel Textile Corp., P. DiBlanco, Cluett Peabody & Co., L. R. Cook, Millville Mfg. Co., and G. Edwards, Enro Shirt Co.; "Cotton Raw Stock," a study group headed by J. N. Little, Anderson Clayton Co., Memphis, Tenn.; and "Design of Experiments" by Joe Moder, Georgia Tech, Atlanta. 3 p.m.—"Picker Laps," a discussion group led by H. F. Jenkins, Avondale Mills, Birmingham, Ala. 3:30 p.m.—"Garment Manufacturing," a group discussion headed by M. R. Saibel, Kurt Salmon Associates, Washington, D. C.; and "Production Planning and Operations Research" by N. L. Sample, Monsanto Chemical Co., St. Louis, Mo. 4 p.m.—"Sliver and Roving," a discussion

group led by G. H. Bass, Swift Mfg. Co., Columbus, Ga.

The program for Friday morning is: 9 a.m.—"Work Sampling" by W. J. Richardson, Lehigh University, Bethlehem, Pa.; "Analysis of Data from Accelerated Life Tests" Talon Inc., Meadville, Pa.; and "Basic Measurements Attributes" by P. Hassell, University of Alabama, Tuscaloosa. 10:30 a.m.—"Quality—A Product of High Morale" by P. B. Comer, Guilford College, Greensboro, N. C.; "Fabric Imperfections," a study group led by W. L. Starcher, International Latex Corp., Newnan, Ga.; "Basic Sampling" by R. J. Hader, North Carolina State College.

The Friday afternoon program will consist of: 2 p.m.—"Vendor-Vendee Relations," a panel discussion with R. W. Peach, Sears Roebuck, R. Moore, Ford Motor Co., N. Shane Jr., Shane Overall Co., and W. J. Clements Jr., Dan River Mills; "Importance of Control of Moisture in Textile Fibers" by J. G. Wiegerink, American Viscose Corp., Marcus Hook, Pa.; "Staple Fiber Yarn," a study group headed by C. A. Dean, Russell Mfg. Co., Alexander City, Ala.

Registration will be held at 8 a.m. both mornings. A social hour and banquet will be held Thursday at 6 p.m. Cost of the entire conference is \$20 for members and \$25 for non-members.

A.A.T.T. Re-Elects Baker

Cameron A. Baker of the Better Fabrics Testing Bureau, was recently re-elected president of the American Association for Textile Technology. All other officers of the association were re-elected. They are: Kurt J. Winter, textile consultant, first vice-president; Giles E. Hopkins, textile consultant, second vice-president; Fred H. Simons, Manchester Worsted Mills, treasurer; and Bernice S. Bronner, secretary.

Elected to the board of governors for three-years terms were Donald Goerg, Celanese Corp. of America; Arthur Jerome, A. E. Jerome Co.; and Graham M. Richardson, The Du Pont Co. Barney Lester, Sidney Blumenthal Co., was elected to the auditing committee for three years.

Union Loses At Darlington Again



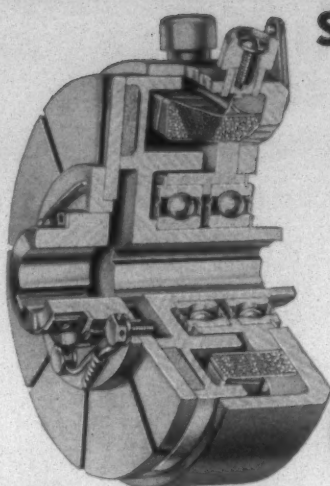
Milliken

A National Labor Relations Board trial examiner has absolved Deering Milliken & Co. of responsibility for back pay or other compensation for employees who lost their jobs in the liquidation of Darlington Mfg. Co. Trial Examiner Lloyd Buchanan said that there was no evidence of "alter ego" continuance of operations or management, transfer of machinery, order, profits, etc., or even

legal successorship to Darlington which could warrant imposition of a remedy on Deering Milliken or other mills in the group.

This is the third set-back in the efforts of the Textile Workers Union of America to place responsibility for Darlington's liquidation with Deering Milliken. Buchanan originally ruled that Darlington had closed and liquidated to evade bargaining with the union. He did not, however, recommend back pay or re-instatement of employees saying that such a recommendation would be futile because the company had been liquidated.

In the second round of the battle the T.W.U.A. attempted to make Roger Milliken, president of Deering Milliken, personally responsible. Buchanan recommended dismissal



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of charges against Milliken, finding that he was not individually guilty of violating the Taft-Hartley Act in liquidating Darlington.

Milliken said he was gratified by this most recent decision and that he hoped it would end the "harassment tactics by the Textile Workers Union." John Edelmann, T.W.U.A. Washington representative, immediately challenged Buchanan's report. The union will file its exceptions in the near future.

The matter has not yet been ruled on by the full N.L.R.B. In 1957 it tied up the remaining assets of Darlington—believed to be about \$776,000. If the full board decides that Darlington was guilty of unfair labor practices, back pay could come out of that sum.

Woven Synthetic Production Down

Production of broad woven goods of man-made fibers was 609 million linear yards during the third quarter of 1959, according to the Bureau of Census. This was 2% below the second quarter output and 3% above the third quarter 1958 output. Rayon and acetate fabric production was 5% below the previous quarter, and 7% less than the output during the comparable period of 1958.

SUMMARY OF PRODUCTION BY CLASS OF FABRIC
(Thousands of linear yards)

Type of Fabric	July- Sept. 1959	April- June 1959	July- Sept. 1958
Man-made fiber fabrics, total	609,260	624,765	589,139
Rayon and acetate broad woven fabrics, total	385,947	407,961	416,385
Blanketing	14,462	12,797	11,183
100% filament rayon and/or acetate fabrics	169,515	169,393	175,740
100% spun rayon and/or acetate fabrics	65,811	86,275	110,918
Combination filament and spun rayon and/or acetate fabrics	27,638	32,378	29,785
Pile, upholstery, drapery, tapestry, and tie fabrics	46,426	44,470	38,944
All other rayon and/or acetate mixtures	62,095	62,648	49,815
Man-made fiber fabrics, except rayon and acetate	212,283	205,746	164,414
Silk and other broad woven fabrics, not elsewhere classified	11,030	11,058	8,340

Packaging Exposition Planned

A total of 326 exhibitors will show the latest in packaging machinery, materials, and methods at the four-day exposition in Atlantic City (N. J.) Convention Hall, April 4-7. The other annual event of "Packaging Week," the National Packaging Conference, also will be held at Convention Hall, April 4-6. Conference sessions will focus on packaging for profit. Last year's conference, held in Chicago, attracted more than 800 packaging executives from all parts of the country. Both events are sponsored by the American Management Association.

Japan, Russia Sign Trade Pact

Japan and the U.S.S.R. have signed a new three-year trade agreement. Trade between the two countries is expected to grow to \$60 million in each direction during 1960, and to reach \$100 million in 1962.

Woolen And Worsted Production Down In The Third Quarter Of 1959

Woolen and worsted fabric production during the third quarter of 1959 was 79.1 million finished linear yards. This was 5% below the second quarter output, and approximately 14% above the comparable period of the previous year.

The output of women's and children's clothing fabrics

at 44.9 million finished linear yards was 1% below that of the previous period, and 7% above the output of the third quarter 1958. Men's and boys' clothing fabric production decreased 11% during the third quarter to 32.1 million finished linear yards.

Output of nonapparel fabrics was 7% below the previous quarter. Production of blanketing decreased 7% to approximately 1.4 million yards. Production of transportation upholstery and other nonapparel fabrics amounted to 0.5 million yards during the third quarter of 1959.

Textile Mill Failures Down

In the 12 months of 1959 69 textile mills with total liabilities of \$7,338,000 failed, according to the Credit Clearing House of Dun & Bradstreet Inc., New York City. In 1958 textile mill failures totalled 92 with total liabilities of \$9,019,000.

Wool And Worsted Consumption Decline

The weekly average rate of fiber consumption on the woolen and worsted systems in November 1959 was 8% below the October rate, and was approximately at the November 1958 level.

The weekly average raw wool consumption during November was 7,426 thousand pounds (scoured basis) or 10% below the October level, and at the same rate as November 1958. Consumption of apparel wool was 10% below the October rate but 7% above that of November of last year.

The rate of consumption of carpet wool declined 10% from the consumption during the preceding month, and was 10% below the November 1958 rate.

Consumption of fibers other than raw wool averaged 6,207 thousand pounds per week, or 6% below the October average, and 1% above November 1958. Data for man-made fiber top converted from tow without combing are included for all periods in total fiber consumption and consumption of "all other fiber."

FIBERS CONSUMED IN WOOLEN SPINNING AND WORSTED COMBING, NOVEMBER 1959

(Thousands of pounds—scoured basis for greasy wools)			
Classification	Nov. 1959	Oct. 1959	Nov. 1958
All fibers, total	54,530	59,275	54,325
Raw wool	29,702	32,986	29,790
Apparel class	18,515	20,688	17,313
Woolen system	8,507	9,260	7,251
Worsted system	10,008	11,428	10,062
Carpet class	11,187	12,298	12,477
Notls, reprocessed and reused, wool and other			
animal fibers	12,631	13,132	11,435
Man-made fibers	10,738	11,608	11,696
All other fibers	1,459	1,549	1,404

Leasing Of Textile Equipment Up

Long-term leasing of production equipment by textile firms during 1959 spurted ahead, reaching a total of \$4.1 million worth of equipment on lease, a gain of 52% over 1958, according to Robert Sheridan, president of Nationwide Leasing Co., Chicago, Ill. He predicted that equipment leasing in the textile industry would double in 1960 because: more equipment manufacturers are using leasing as a sales tool to move their products; more companies will lease their equipment to avoid the pinch of tight money; and more companies will be affected by the increasing technological progress which is speeding up obsolescence of machinery.

Total dollar volume of equipment on lease to all industries reached \$307 million in 1959, a net gain of about \$80 million. This compares to a 1958 gain of \$47 million.

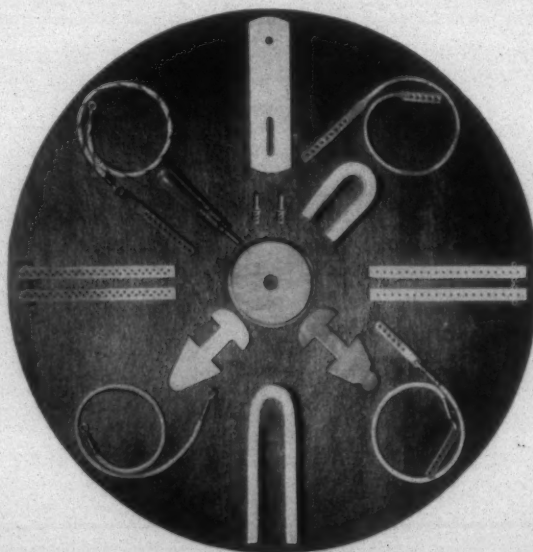


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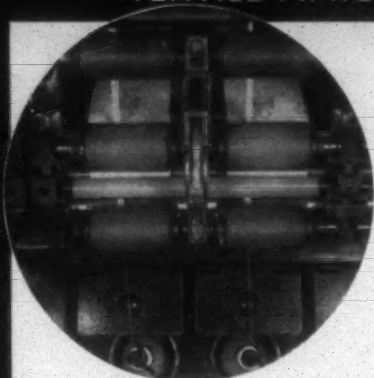
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Spencer Love Sees Good Year Ahead



Love

J. Spencer Love, chairman of the board of Burlington Industries, Greensboro, N. C., has expressed his belief that the textile industry is likely to maintain or have an increase in the rate of improvement shown in 1959. In his statement to stockholders Love said that "the company's forward position on orders booked in most of our divisions is the best that it has been in some time."

Factors cited by Love as contributing to the bettered position were: an improvement in the basic supply-demand situation, a trend away from casual dress, better management, and the use of textile products for new applications.

The report describes low-priced imports as the one major threat on the horizon which is developing into a broad national problem.

N. C. Textile Foundation Reports Worth

The North Carolina Textile Foundation Inc. reports that it entered the new year with a net worth of \$865,946 after income of \$68,354 during the year and expenses of \$66,387. Funds of the foundation are used co-operatively with the School of Textiles of North Carolina State College for supplementing salaries of professors, for travel and industry-contact work of the school staff, and for research.

The foundation at one time provided 100% support for the research program. It has purchased a total of \$500,000 worth of research and education equipment. However, research is currently 98% self-supporting through co-operative projects with individual companies and increases in state appropriation.

Administrative work of the foundation is performed by the North Carolina Textile Manufacturers Association, which charges only for out-of-pocket expense.

Cotton, Man-Made Fiber Consumption

A total of 8.7 million bales of cotton was consumed in the U. S. during the 12 monthly reporting periods ended July 31, 1959. During this period exports of cotton amounted to 2.8 million bales.

During the year ending July 31, consumption of linters amounted to 1.1 million bales. Bleachers consumed 0.6 million bales while other consumers accounted for 0.6 million bales. Stocks of linters at the end of the season amounted to 0.5 million bales or 2 million bales below the July 1958 level.

Consumption of man-made fiber staple by mills with cotton system spindles amounted to 502 million pounds. Of this total 418 million pounds were rayon and/or acetate. All figures are from the Bureau of Census.

Greater Synthetic Fiber Use Seen

Dr. D. K. Dawson, vice-president of The Du Pont Co., predicted at a recent press conference that use of synthetic fibers in the U. S. will pass the billion mark during the 1960s. Dr. Dawson made the prediction at the international home furnishings show in Chicago's Merchandise Mart.

"In 1949," he said, "less than five million pounds of man-made fibers were consumed out of a total of a billion pounds used that year by the industry—just one-half of one percent." In ten years this has grown to 100 million pounds or 6%. He predicted that it could easily double in a few more years.

35 S.R.R.L. Opener-Cleaners In Production

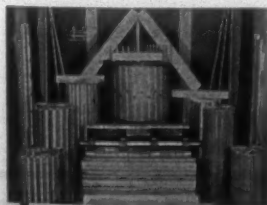
Some interesting background data on the development of the S.R.R.L. cotton opener-cleaner is included in a recent "Research Achievement Sheet" from the U.S.D.A.'s Agricultural Service at New Orleans. The data sheet points out, for example, that the opener-cleaner was developed at a cost of some \$230,000 based on salaries, supplies and equipment. It estimates that the new unit is capable of saving from \$1 to \$2 a bale due to its excellent trash removal capacity and ability to reduce spinnable fiber losses. Its average cleaning efficiency is said to be 30% trash, 15% lint and short fibers. The machine is available in sizes to process from 500 to 1,500 pounds an hour. As of August of this year there were 35 units installed with others on order. One mill group reportedly plans to install ten additional units. Officially announced in October 1957, the opener-cleaner is the result of research begun by the Agricultural Research Service in 1952.

India Seeks To Bar Use Of "Madras"

The Indian government is backing an attempt to limit the use of the word "madras" in this country to goods not imported from India. The All-India Handloom Board recently filed a complaint with the Federal Trade Commission charging that American textile concerns are guilty of misrepresentation in the use of the term.

India's Consul General M. Gopala Menon said in a prepared statement that use of terms such as "Indian madras," "India-type madras plaid" and "India madras coloring," are misleading and constitute unfair competition. Menon said that American manufacturers are underselling the Indian imports by 50 to 60 cents a yard. He denied that the term might now be a generic term. It applies solely to the checked and plaid cloths of Madras, India, Menon said, and to use it otherwise is to practice deception.

He accused Burlington Industries, Sun-Fast Textiles and Ship'N Shore Corp. of wrongly using the term. Also accused were the retail stores of Gimbels and Brooks Bros. The F.T.C. is investigating the complaint to determine whether any violation of law is involved.



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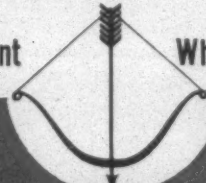
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PERSONAL NEWS

John M. Cheatham, president of Dundee Mills, Griffin, Ga., was recently named a director of the Federal Reserve Bank of Atlanta. His term, which began in January,



Cheatham



Mitchell

is for three years. . . . Walter M. Mitchell, a vice-president and director of Draper Corp., Hopedale, Mass., was redesignated chairman of the board of directors of the bank and federal reserve agent for 1960.

Thomas M. Ripley has been appointed a field technical service representative for American Cyanamid Co.'s fibers division. Ripley will specialize in spinning operations. He was previously associated with Klopman Mills, where for two years he was general overseer of spinning operations at the Ramseur, N. C., worsted mill.

Dr. Kenneth R. Fox and William F. Sullivan have been elected directors of Troy (N. H.) Blanket Mills. Dr. Fox is vice-president of Fabric Research Laboratories, Dedham, Mass. Sullivan is president of the Northern Textile Association.



Inscoe

Joe Inscoe, formerly superintendent of three plants of Carolina Mills Inc., Maiden, N. C., has been promoted to supervisor of yarn manufacturing for all Carolina plants. . . . Earl Killian has been named superintendent of Plant No. 1 at Maiden. . . . Roy Faries will serve as superintendent of Plant No. 5 at Lincolnton, N. C. . . . Dennis James will be in charge of Plant No. 2 at Newton, N. C.

Frances Galligan has been named production manager of Firestone Textiles, Gastonia, N. C., division of Firestone Tire & Rubber Co., Akron, Ohio. Galligan, who was formerly production manager for the cotton division, succeeds Nelson Kessell who has retired. Galligan has been with Firestone for 15 years. . . . F. C. Martin

has been promoted to manager of the synthetics division. . . . Phil R. Williams has been named production manager of the cotton division. . . . C. E. Moss has been appointed manager of textile developments. . . . L. B. McAbee assumes the post of cotton division assistant manager. . . . Alvin V. Riley has been promoted to assistant industrial relations manager. . . . Ralph Johnson has been named safety director. . . . Bob Purkey has been named recreation director.

Dr. Melvin Hochberg has been named a director of Nopco Chemical Co., Newark, N. J. Dr. Hochberg joined Nopco in 1947 and has served since 1958 as vice-president in charge of the company's fine chemicals division.



DeLong

Ernest H. DeLong has been named general manager of the Atlanta, Ga., sales office and warehouse of Dillard Paper Co., Greensboro, N. C. DeLong has been connected with the S. P. Richards Paper Co., in Atlanta, for the past 12 years. He is a director of the Atlanta Chapter, Printing House Craftsmen and the Atlanta Advertising Club.

Graeme G. Whytlaw has been named director of textile development for AviSun Corp., an equally owned affiliate of American Viscose Corp. and the Sun Oil Co., both of Philadelphia, Pa. In his new capacity, Whytlaw will be responsible for AviSun's textile processing research and evaluation programs. Prior to his promotion, he was manager of the applications research and development section in the American Viscose technical and textile service department.

A. W. Thomas Jr. has been named president of the U. S. Textile Machine Co., Scranton, Pa. Thomas succeeds Herbert Gleitz who died several months ago. He previously served as executive vice-president and general manager. . . . Don W. Scheuer, formerly assistant general manager has been named secretary-treasurer of the company and will assist Thomas. . . . Jerome D. Gleitz, formerly an engineer with Marquette Metal Products Co., spindle maker of Cleveland, Ohio, has been named to the new post of vice-president and director of manufacturing. . . . Chester Loveland has been

promoted to vice-president for the fiberglass equipment unit.

Harry Walker Smith has been appointed as assistant manager of sales service for staple fibers by Eastman Chemical Products Inc., Kingsport, Tenn. Smith has worked for Eastman since 1937 in various sales service positions.

Richard M. Salisbury of Charlotte, N. C., has joined the Hartford Fibres Co. as Southern district sales manager. Salisbury will handle Hartford's present products with emphasis on the sales and market development program of Zantrel, Hartford's new polynosic fiber. A graduate of North Carolina State College School of Textiles, he was formerly Southern district sales manager of Celanese Corp. and was also associated with the American & Efrid Mills as assistant to the vice-president in charge of sales.

Wilson F. Hurley and Henry W. Harrison of Hurley & Harrison, Greenville, S. C., have been named representatives for



Hurley



Harrison

Garland Mfg. Co., Saco, Me. They will handle customer relations and sales for all Garland textile products which include both rawhide and plastic loom pickers and textile leathers.

A. Newton Stall Jr. has been promoted to product manager at Gayley Mill Corp., Marietta, S. C. Stall, who has been with the company since 1957, succeeds P. H. Prince who has resigned to become product manager at Gerrish Milliken Mills, Pendleton, S. C., division of Pacolet (S. C.) Mfg. Co.

R. H. (Jerry) McComb has been named production manager at Rudisill Spinning Mills, Lincolnton, N. C. McComb was previously associated with Carolina Fine Fabrics Inc., Hickory.

Gov. Luther H. Hodges of North Carolina was the guest of honor and speaker at the annual dinner of The Association of

Cotton Textile Merchants of New York, January 28, at the Hotel Plaza, New York. Gov. Hodges is a former director of the association and during the war period was head of sales of Marshall Field & Co., manufacturing division, predecessors of Fieldcrest Mills Inc.

Dr. Rush F. McCleary has been elected vice-president for research and development at Jefferson Chemical Co., Houston, Tex. Dr. McCleary joined The Texas Co. in 1940 and was in various chemical research positions with the research and technical department at Beacon, N. Y. Jefferson is equally owned by American Cyanamid Co. and Texaco Inc.

John G. Nissl, New York sales manager for Carbic-Hoechst Corp., retired January 1 after 38 years of service. Nissl, before joining Carbic, was employed by Griesheim-Electron in West Germany.

Martin G. Wallace has been named process development manager at Wellman Combing Co., Johnsonville, S. C. Wellman is engaged in wool scouring and the manufacture of wool top. Wallace was formerly associated with Laurens (S. C.) Mills.

T. F. Cooke has been appointed director of the chemical research department of the organic chemicals division of American Cyanamid Co., New York City. Dr. Cooke joined the company in 1940 as a research chemist. He is a fellow of the American Institute of Chemists and a member of the

American Chemical Society and the American Association of Textile Chemists & Colorists. . . . Dr. Robert S. Long has been named commercial development manager for the organic chemicals division. Dr. Long also joined Cyanamid in 1940 as a research chemist. He is a member of the American Institute of Chemists, the American Chemical Society and the American Association of Textile Chemists & Colorists.

Donald M. Joseph has been appointed vice-president and general manager of Ciba Products Corp., Fairlawn, N. J. Joseph joined Ciba in 1952 as sales manager of its plastics division. He was promoted to manager of the plastics division in 1955 and in 1959 was made general manager of Ciba Products Corp., a position he has held prior to this appointment.

Guy W. Medford, loomfixer with the Fieldcrest Mills, Spray, N. C., was recently honored at the completion of 40 years of service with the company.

Robert P. Wilson, formerly assistant general sales manager of Celanese Fibers Co., New York City, has been named manager of polyester fiber sales. . . . Joseph L. Barach, formerly sales development manager, has been appointed polyester coordinator in the applications and product development department.

M. P. Gooden has been named assistant chief engineer of the fibers division of American Viscose Corp., Philadelphia, Pa.

Formerly plant engineer of the corporation's Front Royal, Va., plant, Gooden will assume his new responsibilities in the Philadelphia office. . . . Eldon E. Campbell, formerly area engineer in the Front Royal plant, succeeds Gooden as plant engineer there.

Eddie W. Siegler, vice-president and general manager of Erwin Mills Inc., Durham, N. C., has been elected to the board of directors of the Durham Bank & Trust Co. Siegler was a member of the board of Citizens National Bank which recently merged with Durham Bank & Trust Co.

Max Whatley has been promoted to plant manager of the cotton division of Judson Mills, Greenville, S. C., division of Cotwool Mfg. Co. Whatley has held a number of supervisory positions including assistant superintendent of the synthetics division and superintendent of the cotton division.

L. T. Jester Jr., has been named manager of the newly established process machinery industries sales unit in General Electric Co.'s component and intermediate distribution sales department. The department is a part of the apparatus sales division. Jester will be in charge of sales to textile machinery manufacturers.

Oscar Payne, vice-president of manufacturing at Crompton & Knowles Corp. of Worcester, Mass., has retired. Payne has been responsible for 148 patents on weaving machines for Crompton & Knowles, in addition to other patents. He invented the

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electric warp stop motion which now is standard on all C&K box looms, and the precision letoff known as the Payne letoff, used on all rayon looms to control tension of warp threads uniformly. He joined Crompton & Knowles in 1925. He became works manager in 1946 and in 1953 was made vice-president and a director of the company.



Robbins

Harry E. Robbins has joined Leesona Corp., Providence, R. I., as a research engineer. Before joining Leesona, Dr. Robbins was employed by the National Aniline Division of Allied Chemical Corp., New York City, as a group leader in its fiber research and development group. Prior to that, he was associated with the Celanese Corp. of America.

George G. Stier has been named president of Nopco Chemical Co., Newark, N. J. Stier was previously vice-president in charge of Nopco's plastics division at North Arlington, N. J. . . . Ralph Wechsler, former president, was named chairman of the board succeeding Thomas A. Printon who will continue as a director and member of the executive committee. . . . Harry A. Batley was named executive vice-president. Batley most recently served as vice-president in charge of industrial production. . . . G. Daniel Davis, former executive vice-president, becomes vice-chairman of the board and continues as president of Jacques Wolf & Co., a Nopco subsidiary.

David X. Klein, technical director of Heyden Chemical Division, Heyden Newport Chemical Corp., New York City, has been appointed a divisional vice-president. Klein, a technical director for the recently formed division since June 1959, has been responsible for the division's expansion and new products program. He was formerly manager of research at the company's Garfield, N. J. laboratories.

Richard H. Powers, formerly manager of filament yarn sales for Celanese Fibers Co., New York City, has been appointed assistant general sales manager. Powers joined Celanese ten years ago as a fabric salesman in the New York district. . . . Randolph J. Jewell, formerly Charlotte district sales manager, has been named manager of sales

development. He has been with Celanese since 1934. . . . L. G. Lovin Jr., formerly assistant manager of acetate and Arnel filament yarns, has been named manager. Lovin joined Celanese in 1950. . . . C. R. Blossom has been promoted from assistant manager of rayon and Fortisan filament yarns. He has been with the company since 1955. . . . T. R. Brown, formerly in sales development, has been named assistant manager of staple fiber and tow sales. Brown joined Celanese in 1947. . . . Quinton Florence, a salesman in the Southern district, has been promoted to sales manager in charge of Southern district sales. He has been with Celanese for nine years.

Theodore D. Betsch has been appointed consumer products technical specialist in the consumer products service department of The Chemstrand Corp., New York City. Betsch has been engaged in textile applications research and service at Decatur, Ala., as a textile engineer in charge of the textured yarn laboratory. Prior to joining Chemstrand in 1951, Betsch held the position of director of quality control with the Sauquoit Silk Co., Scranton, Pa.

Richard J. Brusco, former assistant manager of the Bigelow-Sanford Carpet Co.'s Thompsonville, Conn., plant, has been named plant manager of the Georgia Rug Mill, Summerville, Ga., a division of Bigelow-Sanford.

James H. Daughdrill Jr. has been named president of Kingston Mills, Cartersville, Ga. Daughdrill was previously executive vice-president. His father, James Daughdrill Sr., remains as chairman of the board. . . . Alan M. Pinsky has been named vice-president in charge of sales. Pinsky joined the company in 1956 as general sales agent. Before that he was president of Pinsky Floor Covering Co., Chicago carpet distributor.

Frank Greenwall, chairman of the board of the National Starch & Chemical Corp., New York City, has been named president of Corn Industries Research Foundation. . . . William T. Brady, president of Corn Products Co., New York City, and former president of the foundation, has been made a vice-president and continues as chairman of its executive committee. . . . A. E. Staley Jr., chairman of the board of A. E. Staley Mfg. Co., Decatur, Ill., has been named to a vice-presidency in the foundation. Members of the Corn Industries Research Foundation include 11 companies manufac-

turing products of corn by the wet-milling process.

Ellison C. Mitchell has resigned from the Greenville (S. C.) Textile Supply Co. after 13 years service. He has not announced his future plans.

Marchant C. Cottingham, vice-president of manufacturing at Erwin Mills, Durham, N. C., has been elected president and chairman of the trustees of Watts Hospital in Durham.



Campbell

Malcolm E. Campbell, dean of the School of Textiles at North Carolina State College, Raleigh, had a mild heart attack on January 15 and was admitted to Rex Hospital in Raleigh. Dean Campbell is reported to have already shown marked improvement.

Professor Elliott B. Grover has been requested by Dean Campbell to serve as chairman of a textile executive committee to handle functions normally handled by the dean's office.

Lloyd L. Willis has joined the Callaway Mills Co., LaGrange, Ga., as executive assistant. His primary duties will be assisting with customer relations and will include the supervision of Callaway Guest House. Prior to joining Callaway, Willis had served 20 years with the U. S. Marine Corps. He retired with the rank of Lieutenant Colonel.



Cannado

Royce L. Cannado has joined the Louis P. Batson Co., Greenville, S. C., as a textile products representative. He will be responsible for the specifications of items, the processing and following up of orders from textile mills and the development of new textile products. He will make his headquarters in Greenville.

Freeman J. Daniels, New York attorney and a director of the Abney Mills, Greenwood, S. C., has been elected chairman of the board of directors of Erwin Mills Inc., Durham, N. C. Daniels is senior member of the law firm of Perkins, Daniels, McCormack & Collins. He has been a member of the Erwin Mills' board and its executive committee for 12 years. . . . William H. Ruffin has been re-elected president and chief executive officer of Erwin. . . . J. S. Abney, a director of the company, was elected to the executive committee. All other officers and directors of the company have been re-elected.

Robert E. Droney has been named product manager for Lurex metallic yarns by The Dow Chemical Co., Williamsburg, Va. He joined the Dobeckmun Co. in 1941. Dobeckmun merged with Dow three years ago. Droney was transferred from Cleveland, Ohio, to Williamsburg last year. He will

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Belting

continue to operate from Williamsburg. Droney succeeds Heber E. Allen, assistant sales manager for Dow's textile fibers department, who is retiring after 30 years service with Dow and the Dobeckmun Co. Allen became assistant sales manager for Dow's new textile fibers department in 1958. He was the organizer and first manager of Dobeckmun's industrial products division.

Roy L. Spelman has joined the research and development division of Callaway Mills Co., LaGrange, Ga. where he will serve as product development engineer for the products of Unity Spinning Plant, LaGrange. Prior to joining Callaway he was production engineer at the nylon plant of the Allied Chemical Corp., Hopewell, Va.

James R. Perrin, assistant secretary of Cone Mills Corp., Greensboro, N. C., has been presented with the Distinguished Service Award, highest honor award given by the Greensboro Junior Chamber of Commerce. The award was given Perrin for his leadership in the United Fund campaign.



Lavoie

E. P. Lavoie has joined Wica Chemicals Inc., Charlotte, as general sales representative. Lavoie is active as a sectional committeeman in the Piedmont Section of American Association of Textile Chemists & Colorists.

John P. Harrison has resigned as vice-president in charge of manufacturing at Standard-Coosa-Thatcher Co., Chattanooga, Tenn. Harrison joined the company in 1951 as superintendent of its Coosa Plant in Piedmont, Ala. His future plans are indefinite.

Boutwell H. Foster, inventor of textile fabrics and process improvements, who retired in December after 42 years of service with U. S. Rubber Co., was honored by fellow scientists of the company's research center at a testimonial luncheon recently. Among Foster's developments are Asbestos, a fabric for fire-fighting suits during World War II and flame-resistant ironing board covers; Fiberthin, a high impact, tear resistant fabric for tarpaulins and inflatable "air houses"; and Trilok, a three dimensional fabric used in the new Astronaut space suits. He is also a co-inventor of Laton, a fine elastic clothing yarn.

R. E. (Bob) Park has been appointed purchasing manager of the Saco-Lowell Textile Machinery Division of Saco-Lowell Shops, Easley, S. C. Park was previously in the purchasing department of the Saco-Lowell Gear & Machine Division at Sanford, N. C. He succeeds Ross Allen, who has resigned in order to go into the sales field.

Don S. Holt, executive vice-president of Cannon Mills Co., Kannapolis, N. C., has been named president of Cannon Mills Inc., New York City, sales agent for the parent firm. Holt succeeds Stanley Phillips who has retired. Holt's previous posts include vice-

president in charge of Plant No. 6. He was named a director in 1953. Phillips has been connected with Cannon Mills Inc. for 35 years in the sale of its products. He has been active head of the Cannon sales organization since 1947.

William F. Ferrazano has been named a product manager of textile dyes for Allied Chemical's National Aniline Division, New York City. Prior to his new assignment, Ferrazano was a dye salesman covering textile accounts in New York, New Jersey and southern Connecticut. He joined National Aniline in 1928 as a dye technician. In 1941 he was assigned to sales.

Garret J. Garretson II, vice-president of Turner Halsey Co., was elected chairman of the Textile Section, New York Board of Trade, at the group's annual meeting January 20. William H. Dribben, assistant vice-president of Cone Mills Inc., was re-elected vice-chairman, and John Bendheim, vice-president of M. Lowenstein & Sons Inc., was re-elected treasurer.

Rohm & Haas Co., Philadelphia, Pa., has announced the following staff changes: Dr. F. O. Haas, son of the founder, has been elected president of the company and chairman of the executive committee of the board. Dr. Haas, who has been executive vice-president since 1953, has been a member of the executive committee since 1951, and a director of the company since 1948. Dr. Ralph Connor was elected chairman of the board. Dr. Connor will continue as a member of the executive committee and

as vice-president in charge of research for the company—a position which he has held since 1948. . . . John C. Haas, also a son of the founder, was elected vice-chairman of the board, replacing Dr. F. O. Haas in that capacity. He is also a vice-president of the company and a member of the executive committee.



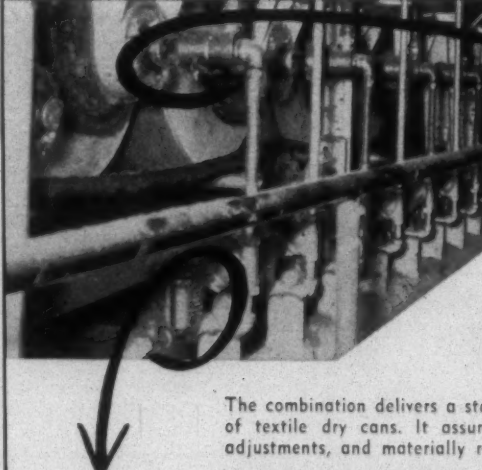
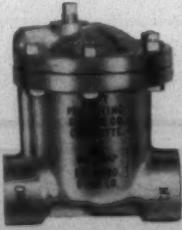
Carlisle

Howard B. Carlisle Jr., has resigned as personnel director of Lyman (S. C.) Printing & Finishing Co. Carlisle was with the firm when it was a division of Pacific Mills, and remained with it when it became Lyman Printing & Finishing Co., a subsidiary of M. Lowenstein & Co.

Dr. J. W. Weaver has joined the central laboratory staff of Cone Mills Corp.'s research and development division. Dr. Weaver is assistant manager of the central laboratory and section head of the chemical research and development section. He was formerly with Koppers Co., Pittsburgh, Pa., where he was engaged in research in wood cellulose.

David R. Gentry, formerly research engineer with the West Point (Ga.) Mfg. Co., has joined the textile research department of Clemson College as assistant textile technologist. Gentry holds an M.S. degree

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The combination delivers a steady flow of hot dry steam to all types of textile dry cans. It assures much faster warm-up, requires no adjustments, and materially reduces downtime.

Syphon Type ROTARY UNION* (above)
A self-aligning and self-adjusting precision mechanical seal which maintains a leakproof connection without mechanical maintenance. Unique syphon support prevents loosening, breaking, or falling off of syphon pipe.

Model 70T UNITRAP* (left)
An inexpensive bucket-type steam trap with a universal pressure range from 0 to 125 lbs. and a capacity up to 1000 lbs. per hour. Stainless steel working parts assure long and trouble free service.

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Stevenson

C. O. Stevenson, Southern sales representative for Ciba Co., New York City, has been appointed sales manager of the Southern district. Stevenson joined Ciba in 1936. . . . George Anderson has been assigned as sales representative in the Georgia territory. . . . John Clark succeeds Anderson as sales representative for the South Carolina territory, with headquarters in Greenville. . . . Neely McFadden Hollis and J. C. Whitt have been appointed to the sales and technical service staffs operating from the Ciba Charlotte, N. C., district sales headquarters. . . . Peter A. Cook has been assigned to sales and technical service responsibilities with headquarters in Charlotte. . . . Clyde L. Miller Jr., has been transferred from the dye group to the chemical specialties division. . . . Clinton A. Dyer has been named to the staff of the chemical specialties division operations of Ciba in Charlotte with sales and technical service responsibilities.

J. Kenneth Brown has been named assistant manager of Union Bleachery, Greenville, S. C., branch of Cone Mills Corp., Greensboro, N. C. Brown joined Union Bleachery in 1949 as a chemist. In 1952, he was made administrative assistant.

J. E. Cobb has been appointed manager of the Gastonia (N. C.) Weaving Co. For the past four years Cobb has been associated with the Cramerton (N. C.) Mills. Prior to that, he was with Fieldcrest Mills at Leaksville-Spray, N. C.



Stull

Philip B. Stull has been elected president and chairman of the board of American Enka Corp., New York City. He succeeds William Gage Brady Jr. who retired recently after serving as chairman since 1953 and as president since last April. Stull was formerly a vice-president and director of Hercules Powder Co. of Wilmington, Del. He has been a director and member of the executive committee of American Enka since 1956.

Robert Gage II has been named a sales and technical representative for Chemurgy Products Inc., Greenville, S. C., manufacturing chemist. Gage is a 1949 textile manufacturing graduate of Clemson College.

Charles Merkel has resigned his post as engineer in charge of the U.S.D.A.'s cotton ginning laboratory at Leland, Miss., to join Continental Gin Co. as vice-president in charge of engineering.

Rama H. King, plant manager of Springs Cotton mills, Lancaster, S. C., has retired after 25 years of service with the company. He joined Springs Mills as an overseer of

weaving at the Fort Mill (S. C.) plant. . . . V. A. Ballard has been named to succeed King.

John R. Adamson has resigned as controller and assistant treasurer of Riegel Textile Corp., New York City. Adamson has served in this capacity for Riegel and its predecessor, The Trion Co., for over 16 years. He did not reveal his plans.

William H. (Bill) Colley has joined the Hillside Plant of Callaway Mills, LaGrange, Ga., as a trainee. Colley graduated from Auburn in 1959 with a degree in mechanical engineering.

John M. Carroll has joined the Callaway Mills Co., LaGrange, Ga., as a trainee in its Hillside Plant in LaGrange. Carroll is a 1959 graduate of Auburn with a degree in mechanical engineering.

OBITUARIES

Loren Lester Dickerson, 68, retired executive vice-president and director of Moultrie (Ga.) Cotton Mills, died recently. Mr. Dickerson retired in 1957 after 37 years as an executive of the company. Surviving are his widow and a son.

Herbert C. Ervin, 50, assistant secretary of J. P. Stevens & Co., New York City, died January 9 in a Dublin, Ga., hospital after a brief illness. Mr. Ervin joined Stevens shortly after the company began operations in Dublin, serving in the capacity of personnel director of the Dublin Plant. He became assistant secretary of the firm in 1949. In 1959 he was also made manager of Southern group of the woolen and worsted division. Mr. Ervin is survived by his widow, a son and a daughter.

Otto Haas, 87, founder and honorary board chairman of Rohm & Haas Co., Philadelphia, Pa., died January 2. Mr. Haas had retired from active participation in the firm on December 31. A native of Germany, he came to this country in 1905. Surviving are his widow and two sons.

Paul Jennings, 86, at one time manager of mills in Clearwater, Langley and Bath, S. C., died in Bennington, Vt., recently. He is survived by his widow and a daughter.

Daniel Walter McLemore Sr., 84, retired textile mill superintendent, died January 12 after a lengthy illness. Mr. McLemore had served with textile mills in Dillon and Chester, S. C., for more than 44 years. Survivors include three sons, and four daughters.

Harold R. Turner, 62 vice-president of J. P. Stevens & Co., Greensboro, N. C., died in a Greenville, S. C., hospital recently. Mr. Turner was in charge of manufacturing in all 17 of Stevens' synthetic plants in Virginia and North and South Carolina. He was a director of the Textile Hall Corp., sponsors of the Southern Textile Exposition. His widow and two sons survive.

MILL NEWS

CONSTRUCTION. NEW EQUIPMENT. FINANCIAL REPORTS. CHARTERS. AWARDS. VILLAGE ACTIVITY. SALES AND PURCHASES

ATLANTA, GA.—Fulton Cotton Mills has purchased for cash the Ainsworth-Precision Castings Co., a division of Harsco Corp., Harrisburg, Pa., Jay Levine, Fulton's board chairman, announced. The amount involved was not disclosed. The sale includes the operations and all assets of the company's seven plants located at Syracuse and Fayetteville, N. Y., Kalamazoo and Marysville, Mich.; Springfield, Tenn.; Cleveland, Ohio; and Chicago, Ill. Mr. Levine reported that the company will operate as the Precision Castings Co. and Ainsworth Mfg. Co., both divisions of Precasco Corp., a newly-formed Fulton subsidiary. Fulton's new acquisition is a major producer of die castings, stampings and machine parts for the automotive, furniture, appliance, camera and electronic industries.

NEW YORK, N. Y.—The board of directors of J. P. Stevens & Co. has approved the acquisition of the manufacturing and related properties of Exposition Cotton Mills Co., Atlanta, Ga., subject to the approval of Exposition's stockholders. The acquisition contemplates the issuance by Stevens of shares of its capital stock and cash payments.

STARKVILLE, MISS.—Buck Creek Cotton Mills, Siluria, Ala., has undertaken a \$100,000 modernization program at its Starkville Mills here. The present program is part of an over-all modernization aimed at replacing every piece of equipment with the exception of the cards.

CRAMERTON, N. C.—The Mayflower Plant of Burlington Industries here has awarded a contract for the construction of a 50,000-square-foot addition. The space will be used for warehousing and for new yarn dyeing facilities. The mill produces Galey & Lord apparel fabrics and Cramerton army cloth.

SPARTANBURG, S. C.—Spartan Mills is installing 208 new Draper Model X-2 50-inch looms as part of a \$500,000 modernization program. About half of the looms have been installed and are in operation. They are being installed in a 132-by-160-foot new air-conditioned addition to the No. 2 building. This brings the company's complement of looms to approximately 2,500. The looms will weave corduroy.

TROUTMAN, N. C.—Increased capacity resulting from a new modernization program will cause The American Thread Co. to discontinue operations at its spinning mill here. The mill has been purchased by Troutman Shirt Co., which already operates one mill in Troutman and has other mills at Mooresville and Sparta, N. C. American Thread purchased the Troutman facility in 1945. The mill has specialized in the spinning of fine count yarns for use in the industrial sewing field.

NEWMAN, GA.—Mt. Vernon Mills, Baltimore, Md., has sold its Newnan Mills Division to C&H Enterprises of Atlanta, Ga. A portion of the machinery and property of Mill No. 1 has been leased back by Mt. Vernon, which will continue to operate it. The rest of the machinery in Mill No. 1

and the machinery in Mill No. 2 will be liquidated. Mill No. 2 will be put up for sale.

CLARKSVILLE, GA.—Clarksville Mills, a subsidiary of United Merchants & Mfrs., is adding 8,000 square feet of floor space to its weave room. The added space will be used for the installation of new looms now on order. Construction is expected to be completed some time in April. Other improvements planned by the mill for 1960 include new drying cans on slashers, and the installation of an overhead conveyor in the cloth inspection room which will carry rolls of fabric through the warehouse to the loading platform.

JOANNA, S. C.—Joanna Cotton Mills has placed its 400-home mill village on sale with authorized employee occupants having the first opportunity to buy. Other mill employees have second priority on the houses. The company has donated some \$200,000 worth of utilities to the Joanna Community Corp. in connection with the home sale.

ATLANTA, GA.—Fulton Cotton Mills has reported earnings of \$2,023,635 before taxes and a net income, after taxes, of \$1,143,635 for the fiscal year ending November 28, 1959. Fulton's consolidated report includes assets and liabilities of both Fulton Cotton Mills and Continental Gin Co., Birmingham, Ala. Fulton acquired Continental April 21, 1959. Continental was founded in 1832 and is the leading manufacturer of machinery for ginning and processing raw cotton.

NEW YORK, N. Y.—Consolidated net sales for J. P. Stevens & Co. for the fiscal year ended October 31, 1959, were \$459,428,608 as compared with \$386,330,770 in fiscal 1958. Consolidated net earnings for 1959 totalled \$18,709,382 after Federal and state income tax provisions of \$7,100,000. This compares with earnings of \$10,935,310 in the previous year.

WEST POINT, GA.—West Point Mfg. Co. has reported consolidated net sales of \$145,619,000 for the fiscal year ended August 29, 1959. This is the highest dollar volume in the company's history and represents an increase of 25% over the previous year's sales total of \$116,093,000. Consolidated net profit for the fiscal year, after all charges and provision for income taxes, was \$6,032,000. The company reported that 25% of the goods sold during the year were composed mainly of synthetic materials. In dollar volume, the sales of synthetic goods totalled \$36,973,000.

WHITINSVILLE, MASS.—Whitin Machine Works has reported a number of recent orders for its spinning and roving frames. Dundee Mills has ordered 34 Piedmont spinning frames in 4-inch gauge totalling 7,976 spindles, eight Hi-Pro Long-Draft roving frames of 96 spindles each and three M-1 Even-Draft drawing frames totalling 24 deliveries. Globe Mills Co. of Lincoln, N. C., has ordered two M-1 Even-Draft drawing frames totalling 16 deliveries

and two M-2 Even-Draft drawing frames totalling eight deliveries. Cone Mills Corp., Greensboro, N. C., has ordered eight Whitin Hi-Pro Long-Draft roving frames totalling 768 spindles and four M-1 Even-Draft drawing frames totalling 32 deliveries. The machinery will be installed in the company's Haynes Plant in Avondale, N. C. Royal Cotton Mills has ordered four Whitin M-1 Even-Draft drawing frames totalling 32 deliveries for its Wake Forest, N. C., mill.

SPINDALE, N. C.—Stonecutter Mills has announced that it will build an 80,000-square-foot addition providing space for some 400 more looms. With construction scheduled to get underway this Spring, the company reports between 150 and 200 new jobs will be created by the expansion. The new building is expected to be ready for the installation of machinery during the last quarter of this year.

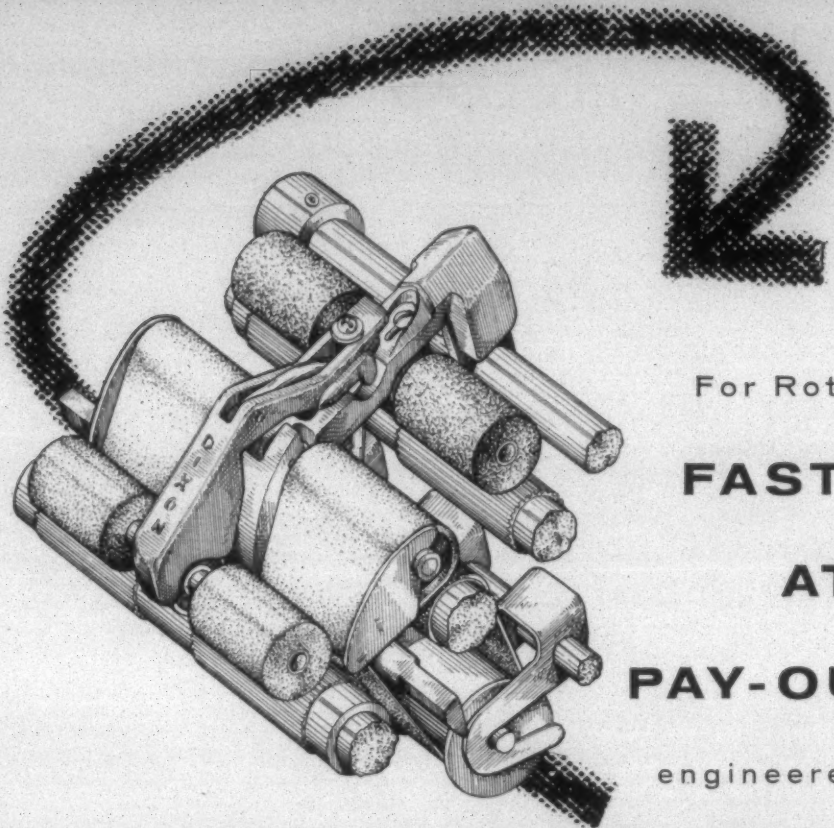
SPRAY, N. C.—The directors of Fieldcrest Mills have approved a very substantial modernization and expansion program scheduled for 1960-62. The company will modernize various operations at an estimated cost of \$10 million.

NEW YORK, N. Y.—Riegel Textile Corp. has reported sales of \$97,350,000 for the 53-week fiscal year ended October 3, 1959. This compares with sales of \$80,969,000 for the fiscal year 1958. Net income in 1959 was \$1,819,000 as compared with \$703,000 in the previous year. Current assets at the year end were listed at \$42,857,000 as compared with \$38,832,000 in 1958. The company had 7,794 persons on the payroll at the end of 1959 as compared with 7,647 at the end of 1958. It reported 196,676 spindles, the same as the previous year. Its looms numbered 4,438 as compared with 4,440 at the close of 1958.

ANDERSON, S. C.—West Point (Ga.) Mfg. Co. has awarded a contract for the construction of a 21,000-square-foot addition to its Wellington Mills here. A. B. Calhoun, Wellington vice-president, said that the expansion program, including the building and machinery, will cost about \$700,000.

WINSTON-SALEM, N. C.—All hourly rated employees of the Hanes Dye & Finishing Co. have received a wage increase. The amount of the increase was not disclosed. The increase is expected to add between \$50,000 and \$55,000 to the company's annual payroll.

NEW YORK, N. Y.—Net earnings of Reeves Brothers Inc. more than doubled in the second fiscal quarter ended January 2 as sales increased 24%. Net profits of \$769,712 for the period compare with \$339,128 the previous quarter. Sales of \$18,751,254 were up from \$15,085,228. Figures for the first half thus show net profits of \$1,277,643, up ten times greater than the \$119,337 for the first half of last year. Sales of \$32,878,123 were up from \$25,978,517.



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Crompton Highland Mills	10,300	Double Apron Roth
Adelaide Mills	12,122	Double Apron Casablanca



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A Look At Government Figures

INTERESTING figures released in early January by the Commerce Department bear out predictions from most quarters that textile activity will continue at a high level for the first six months of 1960. How well the trade winds will blow beyond that point depends to a large extent on what productive pace the industry maintains during the first two quarters of the year. A downturn, or at least a leveling off, could materialize if a favorable balance between production and demand is not maintained.

Woolen And Worsted Industry

In a report on the woolen and worsted manufacturing industry released for publication January 7, the textiles and clothing division of the Business and Defense Services Administration points out that this segment of the industry showed marked gains in both production and sales over 1958. Prospects are for a continued modest rise in 1960.

Citing employment figures, the report noted that woolen and worsted employment has dropped from 179,740 in 1949 to 86,906 in 1957 (latest figures available). This trend continued in 1958, according to preliminary estimates, but was reversed in 1959, successive months showing small gains.

The report concludes that rising imports of woolen and worsted fabrics continued to be "an outstanding problem" during 1959. The increase in imports from 16.4 million pounds in 1958 to 21.1 million pounds for the first ten months of 1959 constituted the sharpest increase in many years. Total 1959 wool fabric imports will be in excess of any previously recorded year in history, the report warns, and there appears little hope for relief in 1960. Optimism for the coming year lies primarily in the expectation that

consumers will channel possibly a slightly larger proportion of their purchasing power to clothing sales.

Man-Made Fiber Broad Woven Goods

In a January 11 analysis for the man-made fiber broad woven goods industry, the B.D.S.A. points out that this segment of the industry ended 1959 with a comfortable backlog of orders and relatively low inventories. By holding to the normal five-day week, these mills can expect a fairly firm market in the months immediately ahead, with production staying at about the same levels for 1959.

Production of man-made fiber fabrics through the third quarter of 1959 was running 5.6% ahead of the 1958 pace and at the highest annual rate since 1955. Third quarter 1959 production was 2% above the same quarter in 1958, but fell 3% below the second quarter of 1959. Total 1959 production is expected to exceed that of 1958 by 3 to 4%.

The long-term trend in exports of man-made fiber fabrics has been falling steadily for the past five years. Export of 157 million yards in 1958 amounted to some 5.4% of total U. S. production. Imports are becoming more of a problem in this segment of the industry too. From the 1958 level of 24 million square yards, under 1% of total U. S. production, imports through September 1959 rose to an annual rate of 53 million yards. That's more than double the 1958 rate. Japan accounted for about two-thirds of the 1959 imports.

Reviewing price trends for man-made fiber fabrics, the report notes that a firming trend began in February 1959, and by July and August prices were at their highest level for those months since 1955. Some weakness developed in September, however, and prices have remained somewhat soft ever since.

Capacity in man-made fibers in July 1959 was estimated at 2.37 billion pounds, down 2.6% from July 1958. The drop reflects further curtailment in the production of rayon

and acetate which was not offset by a 5% expansion in non-cellulosic capacity.

With prospects for continued strong demand for apparel, household goods and automobiles, the man-made fiber broad woven industry should maintain a high level of activity in 1960, the B.D.S.A. believes. Price adjustments underway at the end of the year will tend to improve the industry's competitive position in the months ahead. Competition from rising imports, however, will become an increasing problem in 1960.

Cotton Broad Woven Goods Industry

In reviewing the cotton broad woven goods segment of the industry, the Commerce Department reported January 13 that by midyear 1959 operating margins had regained the levels of 1956. The 1959 recovery is expected to carry over into the months ahead, providing the industry with what the Commerce Department describes as "one of the (textile) industry's infrequent periods of prosperity."

In July of 1959 the production index for the over-all textile industry reached a new high, 123% over the 1947-49 average. The report points out, however, that the textile industry still lags behind manufacturing industries as a whole in expansion of output since World War II. A 22% gain in activity registered through September did take up some of the slack, however, since all manufacturing operations during that period were up only 11%. As a result, the textile index rose from 72% to 80% of all manufacturing.

Cotton broad woven goods production in each quarter of 1959 was higher than in the same quarter of 1958, and total output for the year is expected to increase more than 9%. Production for 1959 is estimated at 9.8 billion square

yards as compared with 9.0 billion in 1958. The index of daily cotton consumption in October was the highest for the month since 1955. Average loom hours per week in October at 127.5% reflected the highest rate of operation for the month in the last ten years.

Loom operations trended upward from the beginning of 1959. In February, less than 50% of the looms in operation were being run more than 124 hours, or approximately five three-shift days, per week. By the end of October about 62% were operating above that level.

Commenting on prices for cotton broad woven goods, the B.D.S.A. points out that the wholesale price index in October 1959 stood at 90.7, a substantial rise from the post-war low of 84.0 reached in July 1958. The mill margin of 31.41 cents in September 1959 was the highest for the industry in the last six years. Textile industry profits for the second quarter of 1959 amounted to 3.2% on sales and 8.1% on stockholders' equity. Profits for manufacturing industries in general still remain considerably higher, at 5.5% on sales and 12.5% on stockholders' equity. While the gap is substantial, the picture is much improved over 1958 when textile earnings were less than one-tenth those of all manufacturing industries.

Employment and earnings in the industry followed the upturn in activity. Employees in October totalled 977,000 compared with 942,000 in January 1959 and an average of 941,000 in 1958. Wages in October averaged \$1.59 an hour, a rise of eight cents an hour over the 1958 average.

The B.D.S.A.'s immediate outlook foresees increased demand being met by gradual increases in output during the first half of 1960. Better operating margins are in prospect as cotton costs are not expected to rise, and cloth prices are expected to remain firm or trend upwards.

TEXTILE INDUSTRY SCHEDULE

Feb. 4-6 (Th-Sa)—Eighth annual **MATERIALS HANDLING SHORT COURSE**, Georgia Tech Engineering Extension Division, Atlanta.

Feb. 8-9 (M-Tu)—Twenty-second annual meeting, **NATIONAL COTTON COUNCIL**, Statler Hilton Hotel, Dallas, Tex.

Feb. 18-19 (Th-F)—Annual conference, **TEXTILE DIVISION, AMERICAN SOCIETY FOR QUALITY CONTROL**, The Clemson House, Clemson, S. C.

Mar. 1-4 (Tu-F)—Spring meeting, **COMMITTEE D-13, A.S.T.M.**, Sheraton-Atlantic Hotel, New York City.

Mar. 10-11 (Th-F)—Spring meeting, **THE FIBER SOCIETY**, Roosevelt Hotel, New Orleans.

March 12 (Sa)—Spring meeting, **PIEDMONT DIVISION, SOUTHERN TEXTILE ASSOCIATION**, Johnston Memorial Y.M.C.A., Charlotte, N. C.

Mar. 24-25 (Th-F)—Spring technical meeting, **TEXTILE QUALITY CONTROL ASSOCIATION**, Dinkler Plaza Hotel, Atlanta.

Mar. 31-Apr. 1 (Th-F)—Textile Engineering Conference, **AMERICAN SOCIETY OF MECHANICAL ENGINEERS**, North Carolina State College, Raleigh.

April 1 (F)—Spring meeting, **SOUTH CAROLINA DIVISION, SOUTHERN TEXTILE ASSOCIATION**.

Apr. 7-9 (Th-Sa)—Annual meeting, **AMERICAN COTTON MANUFACTURERS INSTITUTE**, Americana Hotel, Bal Harbour, Fla.

Apr. 20-21 (W-Th)—Annual meeting, **ALABAMA TEXTILE MANUFACTURERS ASSOCIATION**, Buena Vista Hotel, Biloxi, Miss.

April 23 (Sa)—Spring meeting, **NORTHERN NORTH CAROLINA-VIRGINIA DIVISION, SOUTHERN TEXTILE ASSOCIATION**.

Apr. 26-27 (Tu-W)—Technical Advisory Committee meeting and Board of Trustees meeting, **INSTITUTE OF TEXTILE TECHNOLOGY**, Charlottesville, Va.

Apr. 29-30 (Th-Sa)—The 50th annual convention, **PHI PSI FRATERNITY**, Hotel Roosevelt, New York City.

April 30 (Sa)—Spring meeting, **EASTERN CAROLINA DIVISION, SOUTHERN TEXTILE ASSOCIATION**, N. C. State College, Raleigh.

May 4-5 (W-Th)—Open House, **A.C.M.I. FIBER TESTING LABORATORY**, The Clemson House, Clemson, S. C.

May 11-14 (W-Sa)—Annual outing, **CAROLINA YARN ASSOCIATION**, Pinehurst, N. C.

May 19-21 (Th-Sa)—The 60th anniversary meeting, **GEORGIA TEXTILE MANUFACTURERS ASSOCIATION**, Diplomat Hotel and Country Club, Hollywood, Fla.

May 23-27 (M-F)—**AMERICAN TEXTILE MACHINERY EXHIBITION**, Atlantic City, N. J.

May 26-28 (Th-Sa)—Annual meeting, **SOUTH CAROLINA TEXTILE MANUFACTURERS ASSOCIATION**, The Cloister, Sea Island, Ga.

May 31-June 2 (Tu-Th)—11th Annual **COTTON RESEARCH CLINIC** (sponsored by The National Cotton Council), Grove Park Inn, Asheville, N. C.

June 23-25 (Th-Sa)—32nd annual convention, **SOUTHERN TEXTILE ASSOCIATION**, The Grove Park Inn, Asheville, N. C.

Sept. 8-9 (Th-F)—Fall technical meeting, **TEXTILE QUALITY CONTROL ASSOCIATION**, The Clemson House, Clemson, S. C.

Sept. 8-9 (Th-F)—Annual meeting, **COMBED YARN SPINNERS ASSOCIATION**, The Cloister, Sea Island, Ga.

Sept. 15-16 (Th-F)—Textile Processing Symposium, **AMERICAN GAS ASSOCIATION**, Sedgefield Inn, Greensboro, N. C.

Sept. 15-16 (Th-F)—Annual outing, **CHATTANOOGA YARN ASSOCIATION**, The Read House, Chattanooga, Tenn.

Sept. 27-28 (Tu-W)—The ninth annual **CHEMICAL FINISHING CONFERENCE**, sponsored by the National Cotton Council, Statler Hotel, Washington, D. C.

Sept. 28-30 (W-F)—Annual meeting, **NORTH CAROLINA TEXTILE MANUFACTURERS ASSOCIATION**, Carolina Hotel, Pinehurst, N. C.

Oct. 3-8 (M-F)—The 21st **SOUTHERN TEXTILE EXPOSITION**, Textile Hall, Greenville, S. C.

Oct. 18-21 (Tu-F)—Fall meeting, **COMMITTEE D-13, A.S.T.M.**, Sheraton-Atlantic Hotel, New York City.

Oct. 19-22 (W-Sa)—Annual meeting, **CARDED YARN ASSOCIATION**, The Grove Park Inn, Asheville, N. C.

(M) Monday; (Tu) Tuesday; (W) Wednesday; (Th) Thursday; (F) Friday; (Sa) Saturday

—Index to Advertisers—

Allied Chemical Corp., Solvay Process Div.	64
American Moistening Co.	17
American Textile Machinery Exhibition	26
Armstrong Cork Co.	74 and 75
Bahson Co., The	5
Barkley Machine Works	80
Burkart-Schier Chemical Co.	82
Chemstrand Corp. (Acrilan)	27
Cluett, Peabody & Co., Inc.	18 and 19
Coker Machine & Foundry Co.	20
Crown Chemical Co.	4
Dary Ring Traveler Co.	83
Davis, A. Benson (Ben)	93
Dayton Rubber Co., The	8 and 9
Dillard Paper Co.	35
Dixon Corp.	2
Draper Corp.	2
Dronsfield Bros., Ltd.	48
Eagle Roller Repair Co.	93
Eaton Mfg. Co.	78
Electro-Mechanical Engineering Co.	79
Foster Machine Co. (Lindly Div.)	44 and 45
Gates Rubber Co., The	7
Geigy Dyestuff Div. of Geigy Chemical Corp.	95
General Asbestos Rubber Div. of Raybestos-Manhattan, Inc.	56
General Dyestuff Co. Div. of General Aniline & Film Corp.	11 and 12
Georgia-Carolina Oil Co.	37
Griffin Sons, Inc., Ira L.	Back Cover
Hamilton & Sons Machine Mfg. Co., Inc.	80
Howard Bros. Mfg. Co.	6
Ideal Machine Shops, Inc.	30 and 31
Keover Starch Co.	70
Kluttz Rings, Inc.	85
Koppers Co., Inc.	21
Laurel Soap Mfg. Co., Inc.	57
Loper Co., Ralph E.	80
Manhattan Rubber Division	56
McDonough Power Equipment, Inc., Machine & Foundry Div.	82
McLeod Leather & Belting Co.	86
Meadows Mfg. Co.	29
Harley Mitcham & Co.	48
Mooreville Iron Works, Inc.	46
N. Y. & N. J. Lubricant Co.	Front Cover
Nopco Chemical Co. (Jacques Wolf Div.)	33
Perfecting Service Co.	87
Price Spindle & Flyer Co., Inc.	28
Raybestos-Manhattan, Inc.	56
General Asbestos & Rubber Div.	56
Raymond Service, Inc., Chas. P.	93
Rhoads & Sons, J. E.	68
Rice Robby Chain Co.	81
Ridenhour, Hoyt A.	93
Roberts Company, The	23
Seydel-Woolley & Co.	25
Signode Steel Strapping Co.	10
Smith Textile Apron Co.	68
Sonoco Products Co.	3
Southern Shuttles Div. (Steel Heddle Mfg. Co.)	13
Southern Textile Works	93
Steel Heddle Mfg. Co. and Southern Shuttles Div.	13
Steel & Tank Service Co.	46
Stover Co., Charles G.	93
Tensitron, Inc.	93
Terrell Machine Co., Inc., The	38
Textile Apron Co.	82
Textile Hall Corp.	88
Thomaston Mills	56
Todd-Long Picker Apron Co.	83
Ton-Tex Corp.	64
Turner & Chapman	93
Watson & Desmond	53
West Point Foundry & Machine Co.	14 and 15
Whitinsville Spinning Ring Co.	81
Wolf & Co., Jacques	33
Wonalancet Co.	83
Young Machine Co., F. A.	16



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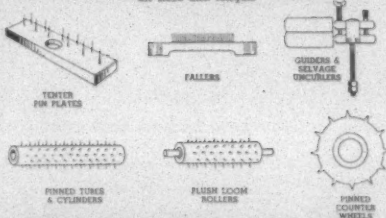
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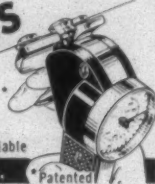
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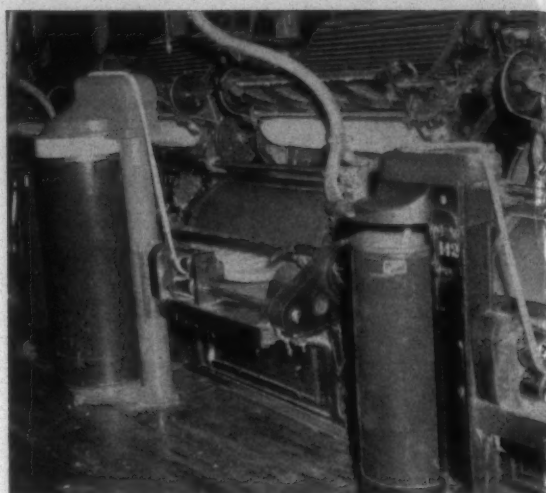
This issue of TEXTILE BULLETIN . . .

. . . features

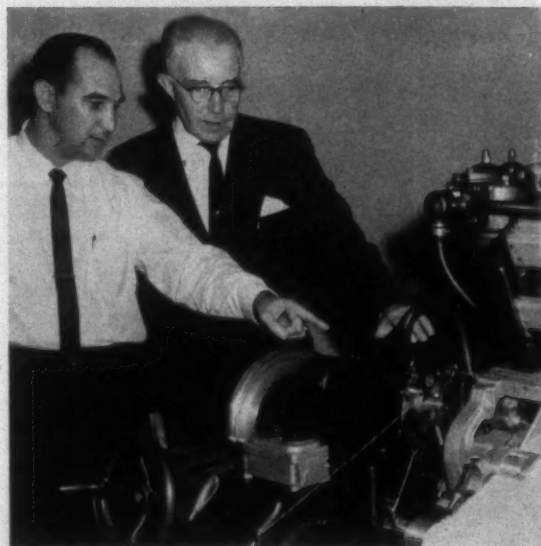
Continuous Modernization Spells Success At Johnston Mfg. Co., Charlotte, N. C.	39
Preventative Maintenance Control How To Set Up A Preventative Maintenance Program By William Sproule	42
Maxbo Loom Has First U. S. Showing Swedish Loom Demonstrated At Greenwood, S. C.	47
The Designing Of Pile Fabrics, Chapter 3 By E. B. Berry	49
The Effect Of Cure Variations On Properties Of Resin Treated Fabrics An Understanding Of The Principles Involved By P. B. Roth and Q. M. Rhodes	54
A Report On Carlisle Finishing Co. One Of The Nation's Most Modern Finishing Facilities	58
The Application Of Switchgear To Textile Mills A Survey Of Modern Practices In Such Systems By R. N. Wilson	65
The Loomfixer And His Job (Part 15) Keeping The Loom Protector Motion In Good Condition By Wilmer Westbrook	69
Spinning, Spooling And Warping Some Notes From An S.T.A. Discussion	71
Increased Automation For The Textile Industry? Foster Machine Co. Named Selling Agent For Lindly & Co.	73
Auburn Boasts New Processing Lab A New Facility For Applied Research	76

. . . and includes

New Products	22	Mill News	89
New Literature	30	Editorial	91
News of Suppliers	34	Textile Industry Schedule	92
Personals	84	Index To Advertisers	93
Obituaries	88	Classified Advertising	93



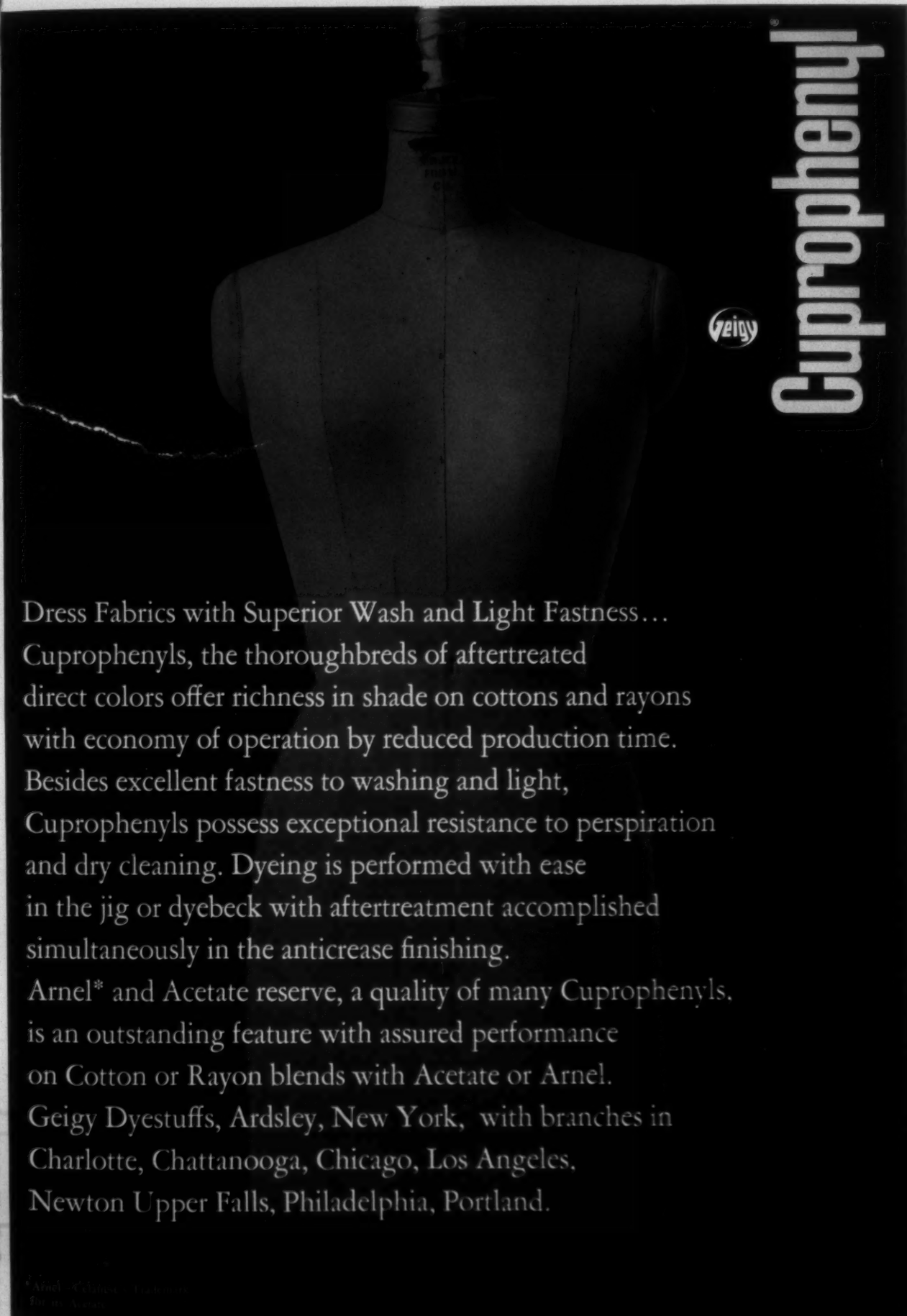
Johnston Mfg. Co. Modernizes, Page 39



The Maxbo Loom, Page 47



Carlisle Finishing Co., Page 58



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